

W.S. Lee Steam Station – Ash Removal Plan

February 11, 2015

William States (W.S.) Lee Steam Station

Ash Removal Plan



Revision 01

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Version Control

Revision	Date	Revision Details
01	February 11, 2015	<p>Incorporate resolution to SC DHEC comments provided on January 27, 2015:</p> <ul style="list-style-type: none">• Update Section IV Schedule for Implementation of Major Activities to include actual dates, and no later than calendar dates.• Add Sampling and Analysis plan to Section VIII Provisions for the Safe Removal of Ash• Update water permit dates in Section X Environmental Permitting Plan

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I. Statement of Purpose

Duke Energy Carolinas, LLC (Duke Energy or the Company) entered into Consent Agreement 14-13-HW (Consent Agreement) with the South Carolina Department of Health and Environmental Control (SCDHEC) on September 29, 2014. The Consent Agreement requires the investigation and remediation of two ash placement areas at the William States Lee (W.S. Lee) Steam Station, Tax Map Number 260-00-01-003-000. The ash placement areas include the “Inactive Ash Basin” (IAB), the “Ash Fill Area”, and areas where ash, other coal combustion residuals, or their constituents, including contaminants, (collectively Coal Combustion Residuals or CCR or ash) may have potentially migrated from these ash placement areas. These areas are collectively referred to hereinafter as the “Site”.

The Consent Agreement defines the process to assess and address any release or threat of release of CCR or other pollutants from the Site to the environment and to provide for the final disposition of the Site. This Ash Removal Plan (Plan) represents the first step in that process by outlining the key components for removal of ash from the Inactive Ash Basin and the Ash Fill Area. As required by the Consent Agreement, this Plan includes: 1) a time schedule for implementation of all major activities required by the Plan, 2) characterization of the ash, 3) provisions for the safe removal of the ash, 4) management of storm water during the project, 5) management alternatives for the ash, and 6) evaluation of the stability of the rim dike and any other slopes impounding the ash placement areas during ash removal activities. These requirements are provided for in Sections IV through IX of this Plan.

The scope of work in removing ash from the Site will be determined by Consent Agreement requirements, applicable laws, rules, permits, and approvals that control the activities to be performed under the Plan. For example, the existing W.S. Lee Storm Water Pollution Prevention Plan (SWPPP) must be modified and approved to address management of storm water during the project as defined herein. In addition, South Carolina Department of Transportation (SCDOT) encroachment permits must be obtained for work in the right-of-way of Lee Steam Plant Road, which is expected to include temporary access into the Ash Fill Area and potentially a pipe crossing for water management.

These examples illustrate actions that could potentially affect the precise scope of the work to be performed under the Plan. As a consequence, neither the submittal of this Plan nor its approval by SCDHEC should be taken as requiring actions different from other such applicable requirements. Thus, Duke Energy submits this plan to SCDHEC based on the understanding that it may be necessary to make changes in the Plan in the future to reflect any such actions. In the event that there are significant changes in

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scope that impact the intent of the content outlined in the key components of the Plan, the Company will submit a revised plan with such changes to SCDHEC for approval. Notification of delays that impact schedule dates provided in this plan will be provided to SCDHEC as outlined in the Consent Agreement.

II. General Facility Description

W.S. Lee Steam Station is located at 205 Lee Steam Plant Road in Belton, South Carolina in Anderson County. The three coal fired units, which became operational in the 1950's, generated approximately 370 megawatts (MW) of electricity until early October 2014. Units 1 and 2 were introduced into service beginning in 1951 and were retired on November 6, 2014. Unit 3 came into service in 1959 and was shut down on October 4, 2014 to be converted to a gas-fired unit.

Ash Basin

Prior to 1974, ash was placed in the IAB located southeast of the power plant. The IAB is bordered to the north and east by the Saluda River, to the west by the W.S. Lee Steam Station facilities, and to the south by Lee Steam Plant Road (South Carolina Highway S-22-67). The location of the IAB is shown in Figure 1. Constructed in 1951 and later expanded, the IAB is bound on all sides by a rim dike that encompasses approximately 19 acres. The dike has a crest elevation of approximately 688 feet mean sea level (msl). The elevation of the toe of the dike varies from elevation 645 feet msl along the Saluda River to elevation 668 feet msl in other areas based on topographic survey. The IAB contains approximately 1.1 million tons of ash. The remaining impoundment volume is less than 50 acre-feet, and the height of the dike from the surface of the ash to the crest is less than 25 feet. The surface of the IAB is relatively flat, with isolated high areas, and free water is not present. The majority of the IAB, with the exception of the crest of the dike, is wooded.

Ash Fill Area

Ash was used in the past as backfill into a former soil borrow area identified as the Ash Fill Area. This area encompasses approximately 16 acres located south of and adjacent to Lee Steam Plant Road directly across from the IAB, and includes approximately 256,000 tons of ash. The Ash Fill Area is bordered to the north by Lee Steam Plant Road, to the east by the Saluda River, to the south by undeveloped wooded land, and to the west by a power line and natural gas line right-of-way. The location of the Ash Fill Area is shown in Figure 1. The surface elevation of the Ash Fill Area ranges from a high of approximately 760 feet msl at the southern boundary to a low of approximately 650 feet msl at the northeast boundary. The majority of the Ash

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Fill Area is wooded, with the exception of paths cleared for recent geotechnical exploration activities.

Other Areas

At this time, the presence of ash has not been identified at the Site outside the IAB and Ash Fill Area. If other areas of ash are identified at the Site during the ash removal process or subsequent assessment, these areas will be addressed as prescribed in this Plan and the Consent Agreement.



Figure 1: W.S. Lee Inactive Ash Basin and Ash Fill Area

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III. Project Charter

Duke Energy has formed an internal team, the Ash Basin Strategic Action Team (ABSAT), dedicated to defining and executing a comprehensive strategy for increased oversight and closure of the Company's ash basins.

As outlined in the Consent Agreement, the Company has assembled and submitted to SCDHEC this Ash Removal Plan. The Consent Agreement states implementation of this Plan must begin within 15 days of receipt of SCDHEC's written approval of the Ash Removal Plan. The Company began implementation of the Ash Removal Plan by entering a contract and issuing a purchase order agreement with a contractor for the initiation of excavation, transportation, and disposal of the ash from the Site. The contractor will mobilize to the Site within 30 days of the receipt of the approved Ash Removal Plan and all applicable permits. The schedule for implementation of major activities in this Plan is presented in Section IV.

The project will ultimately provide for the final disposition of the Site. Development of this Plan represents the first step in that process and will be followed by ash removal, assessment, remediation (if required), and Site closure activities. The objective of this Plan is to present an evaluation of the ash and Site conditions and, based on that evaluation, define the general requirements for the safe removal of ash from the Site.

The Ash Removal Plan will generally involve the following activities:

- Issue a purchase order and a notice to proceed to the selected contractor for ash excavation, transportation, and disposal
- Obtain permits and approvals required to initiate ash removal activities
- Complete project work plans described in Section VIII, "Provisions for the Safe Removal of the Ash"
- Mobilize contractor
- Remove ash from the IAB and the Ash Fill Area:
 - Install initial erosion and sedimentation control measures
 - Install truck wash system
 - Clear vegetation within the work area
 - Install contact water collection basin and pipeline to yard sump for management of storm water and dewatering
 - Construct cut-off and diversion ditches in and around the Ash Fill Area, as needed, to control storm water run-on and run-off; modify as needed throughout the work
 - Excavate and transport ash from the IAB and the Ash Fill Area to the R&B Landfill in Homer, Georgia
 - Install and maintain additional erosion control measures as needed throughout the work

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- Sequentially lower the IAB dike and deepen the sump in conjunction with ash removal to limit potential impoundment within the dike to less than 50 acre-feet
- Excavate and stockpile suitable soils removed from the IAB dike for future use in final Site grading
- Stabilize disturbed areas as ash removal is completed

IV. Schedule for Implementation of Major Activities

The following table presents the schedule for implementation of major activities comprising this Ash Removal Plan. Additional activities required for compliance with the Consent Agreement are also listed, although the dates are dependent upon the outcome of preceding activities and regulatory review periods and cannot be determined at this time. Therefore, as required by the Consent Agreement, implementation schedule updates will be included in the monthly reports and with submittal of subsequent plans (Assessment Plan, Closure Plan, and the Remedial Plan, if required).

Major Activity	No Later Than Date
Submit Monthly Progress Report to SCDHEC*	October 30, 2014, then monthly thereafter
Submit Ash Removal Plan to SCDHEC*	December 18, 2014 (actual)
Submit Health and Safety Plan to SCDHEC*	December 18, 2014 (actual)
Issue Purchase Order to the selected contractor to implement the Ash Removal Plan*	December 15, 2014
Submit Ash Removal Plan Revision 1 to DHEC	February 11, 2015
Submit permitting applications and regulatory approval requests required to initiate ash removal activities	February 11, 2015
Receive Ash Removal Plan approval from DHEC	February 25, 2015
Receive permit and regulatory approvals from DHEC	February 25, 2015
Initiate contractor mobilization	March 12, 2015
Initiate excavation, transportation, and off-site disposal of ash from the Site	May 25, 2015
Complete Ash Removal	December 31, 2017
Submit Ash Removal Report to SCDHEC*	December 31, 2017

*Requirement of the Consent Agreement

Removal of ash from the Site is anticipated to be completed by December 31, 2017. The duration of this work may change based upon several factors that are encountered during excavation, including but not limited to weather, final ash quantities, traffic route considerations, and other activities outside of the Site. Progress of the ash removal will

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be included in the Monthly Progress Reports. Duke will notify SC DHEC of delays of major activities in accordance with item 16 of the Consent Agreement.

V. Selected Management Alternative for the Ash

The Company solicited opportunities for beneficial reuse and proposals for the excavation and off-site disposal of ash from the Site. Based on the outcome of this process, the Company selected Waste Management National Services (WMNS) as the contractor for removal, transport, and off-site disposal of ash from the Site.

WMNS has a strong commitment and successful history with the utility industry and has already installed dedicated monofills for the disposal of CCR at several of their landfill disposal sites. In addition, WMNS has been transporting and disposing of ash at many of their landfills for over 10 years and understands the characteristics of ash as it relates to the landfill system.

The Plan includes the excavation and removal of approximately 1.1 million tons of ash from the IAB and an estimated 256,000 tons of ash from the Ash Fill Area.

Ash removed from the Site will be transported by WMNS to the R&B Landfill in Homer, Georgia which is a properly permitted facility in compliance with 40 CFR Part 258, Subtitle D of the Resource Conservation and Recovery Act (RCRA). The R&B Landfill will continue to be properly managed and maintained to provide environmental compliance with applicable permits, rules, and regulations.

Contingent Plan: Ash Disposition Site

In the event of any issues with accepting ash at the R&B Landfill, a suitable alternative site has been identified by WMNS. Waste Management has an extensive network of landfills; specifically 271 active solid waste landfill disposal sites, which account for nearly 40% of the total United States disposal capacity. As such, Waste Management can provide an alternative facility in the unlikely event that one is needed. The Richland Landfill in Elgin, South Carolina has been identified as the contingent ash disposition site for this project.

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Transportation of the Ash

Ash will be transported from the Site via trucks to the off-site disposal facility. Transportation will be conducted by approved transporters. Drivers and trucks will meet Department of Transportation (DOT) and other applicable federal, state, and local regulations. Drivers will follow DOT trucking regulations, including DOT bridge laws, and comply with WMNS's Transportation Plan, which details on and off-site traffic control requirements, truck inspections and maintenance requirements, operator requirements, and on-road safety rules. The possible truck route is shown in Figure 2. This route will be adjusted, as practical, with consideration of community impacts.

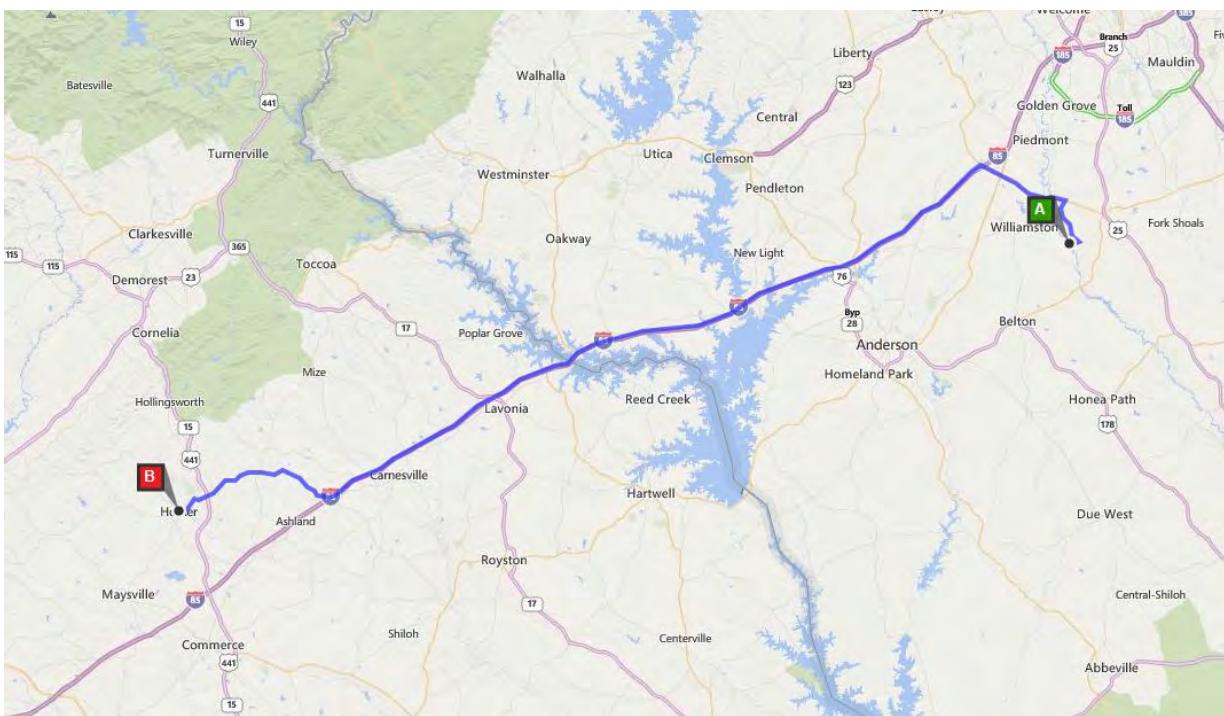


Figure 2: Possible Truck Route to R&B Landfill in Homer, Georgia

For excavation and hauling, the work schedule will typically include five 11-hour work days. This typical schedule may be modified to meet project schedule requirements.

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Contingent Plan: Transportation of the Ash

In the event that the contingent ash disposition site is utilized, ash will be transported from the Site via trucks to the off-site disposal facility by approved transporters, following the regulations and requirements described previously. The possible truck route is shown in Figure 3. This route will be adjusted, as practical, with consideration of community impacts.

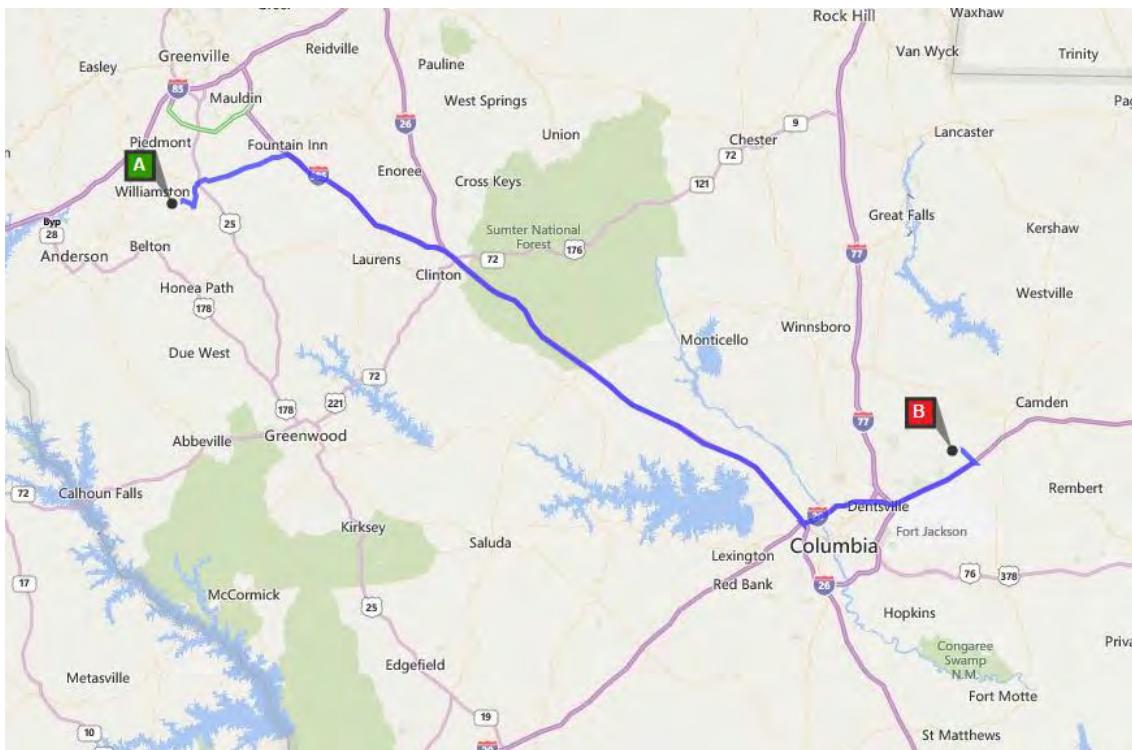


Figure 3: Possible Truck Route to Richland Landfill in Elgin, South Carolina

VI. Characterization of the Ash

Ash was placed in the IAB from approximately 1951 until the mid-1970s. Ash was placed in the Ash Fill Area within this same timeframe. The IAB and Ash Fill Area material is generally a mixture of wet-sludged fly ash and bottom ash.

S&ME, Inc. (S&ME) performed subsurface explorations in both areas and reviewed previous geotechnical data for the purpose of characterizing the following:

- Horizontal and vertical limits of ash
- Geotechnical properties of the ash (IAB only)
- Chemical properties of the ash

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Inactive Ash Basin

S&ME utilized historic data for the ash in the IAB to support the stability analysis of the IAB dike summarized in Section VII. The table below summarizes the findings of previous testing.

Testing Performed	Findings
Soil test borings (STB), cone penetrometer tests (CPT), and flat blade dilatometer tests (DMT), all performed in the IAB ash material	1 to 1.5 feet soil cover underlain by ash ranging in thickness from 23 to 42 feet
Vane shear tests	Ultimate shear strengths ranging from 682 to 2,885 psf; residual shear strengths ranging from 620 to 2,140 psf
Classification tests	Natural moisture content from 18.6 to 38.2%; grain size distribution of gravel (%) 0 to 22.4, sand (%) 20.7 to 64.3, and fines (%) 24.0 to 79.3; soil classifications of ML and SM, or sandy silt and silty sand
Shear wave velocity, Electric Seismic Piezocene Penetration Test (SCPT)	Shear wave velocity ranging from 960 to 1,036 feet per second
Shear wave velocity, Multi-channel Array Surface Wave (MASW)	Shear wave velocity ranging from 856 to 990 feet per second

The following table presents the results of Consolidated Undrained Compression Tests and Direct Shear Tests in summary form.

Test	Parameter		Range of Values Obtained
CU Triaxial	Cohesion	Total (psf)	0 – 2,100
		Effective (psf)	0 – 400
	Friction Angle	Total (°)	9 – 44
		Effective (°)	26 – 35
Direct Shear	Cohesion	Peak (psf)	0 – 530
		Residual (psf)	0 – 340
	Friction Angle	Peak (°)	26 – 36
		Residual (°)	24 – 35

S&ME conducted an exploration of the IAB in the fall of 2014, which included direct push borings, soil test borings, cone penetrometer soundings, and Dilatometer Modulus Tests to define the vertical extent and properties of ash in the IAB which were generally consistent with the findings of previous testing. Prior to shipment of the contents of the direct push soil (ash) sleeves and the split spoon samples to the disposal facility, a representative composite sample of ash was collected from the waste drums. This sample was analyzed at a certified laboratory for waste characterization and

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acceptance of the material. S&ME performed a toxicity characteristic leaching procedure (TCLP) metals test on this sample, which included analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. This testing detected barium at a concentration of 2.2 mg/L in the IAB composite sample, well below the concentration limit of 100 mg/L for characterization as hazardous waste. No other metals were detected in the TCLP test.

The IAB dike was built in multiple stages. The initial basin, constructed in 1951, was located adjacent to the Saluda River with an area of approximately 8 acres and a maximum top of dike elevation of 660 feet msl. Between completion of this initial basin and the mid 1960's, the basin was expanded to its current 19 acre footprint with a perimeter dike at a maximum top elevation of 688 feet msl. This "phased" construction sequence has resulted in a perimeter dike with a multi-layered cross section along the Saluda River side that includes both soil and ash in one area where the original dike extends outside the expanded dike. The vertical and horizontal extent of ash in the IAB, based on the studies performed, is reflected in the Ash Removal Concept Plans included in Appendix A.

Samples of ash from the IAB have been and will be collected and analyzed at a certified laboratory to support the material acceptance requirements of the disposal facility.

Ash Fill Area

S&ME also conducted exploration activities in the Ash Fill Area in the fall of 2014. S&ME's exploration included a geophysical survey, eighty-two direct push borings, and test pits to define the horizontal and vertical extent of ash in the Ash Fill Area. This delineation was used as the basis of the Ash Removal Concept Plan for the Ash Fill Area included in Appendix A of this plan. Prior to shipment of the contents of the direct push soil sleeves to the disposal facility, a representative sample of ash was collected from waste drums. This sample was analyzed at a certified laboratory for waste characterization and acceptance of the material. S&ME performed a TCLP metals test on this sample, which included analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Barium was measured in the Ash Fill Area composite sample at a level of 1.8 mg/L, well below the concentration limit of 100 mg/L for characterization as hazardous waste. No other metals were detected in the TCLP test.

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VII. Stability Analysis

Inactive Ash Basin

To provide data for evaluation of the stability of the IAB dike, S&ME executed a field and laboratory data collection program to establish the as-built dike cross section at representative locations and the engineering properties of the soil and comingled soil/ash layers. The locations of these representative cross sections are shown in Figure 4 and the cross sections are presented in Figures 5 through 11. S&ME then evaluated the stability of both existing conditions and those anticipated during ash removal.

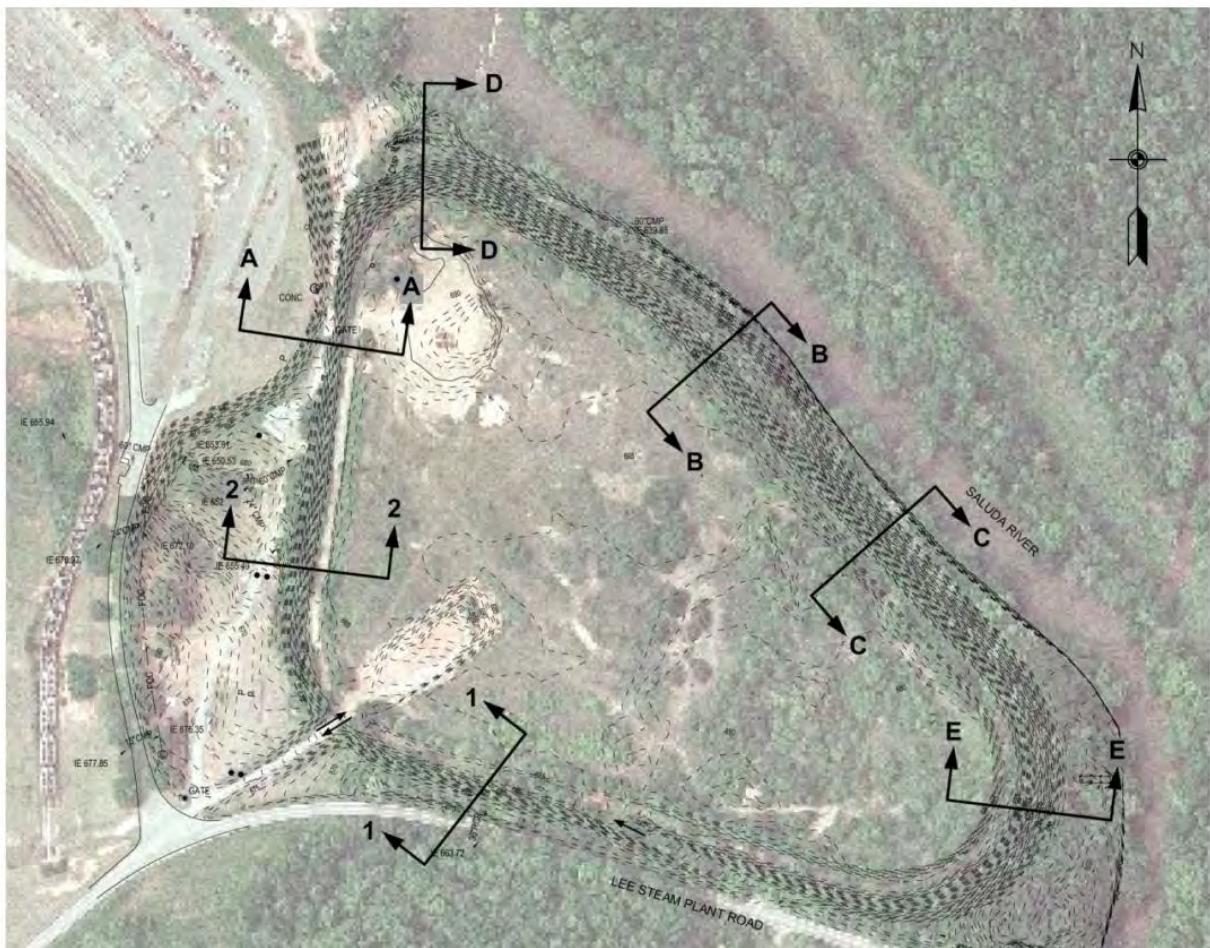


Figure 4: Representative IAB Cross Section Locations

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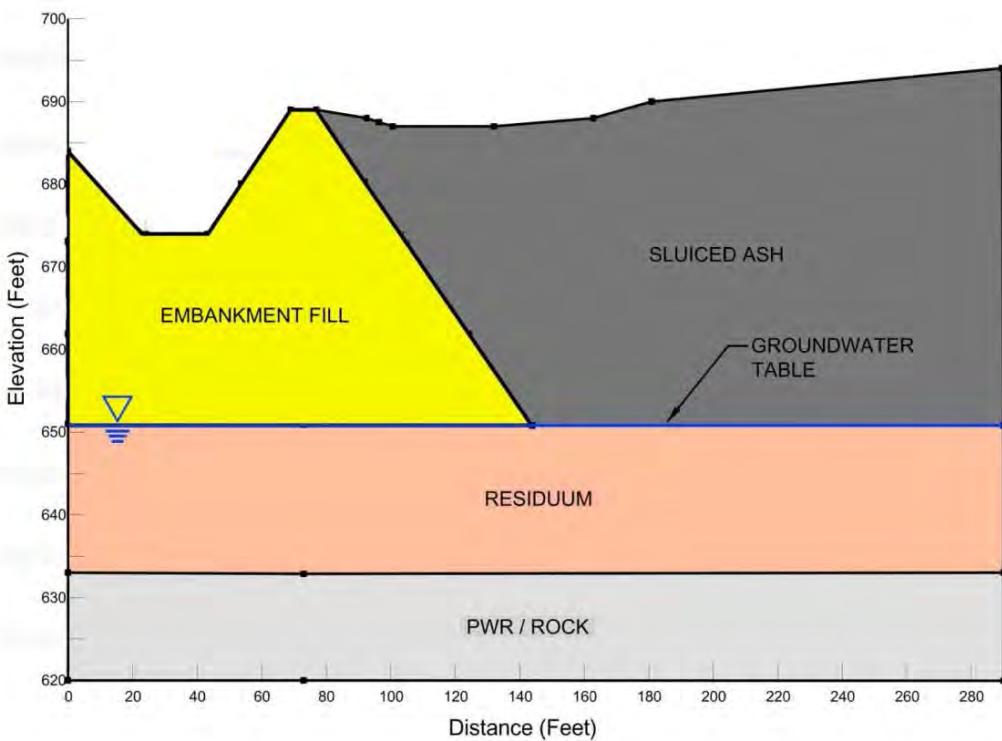


Figure 5: IAB Existing Cross Section A-A

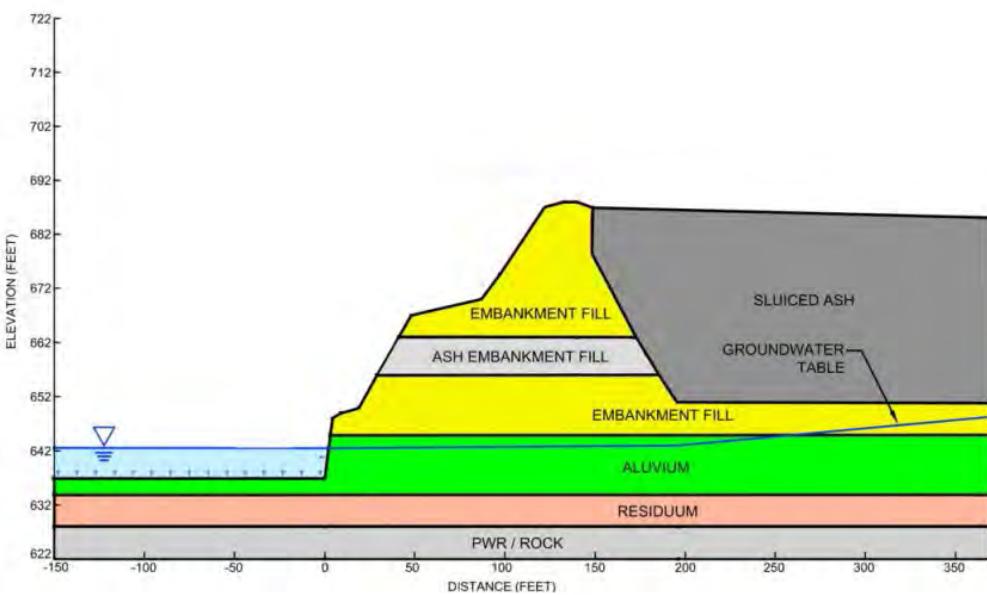


Figure 6: IAB Existing Cross Section B-B

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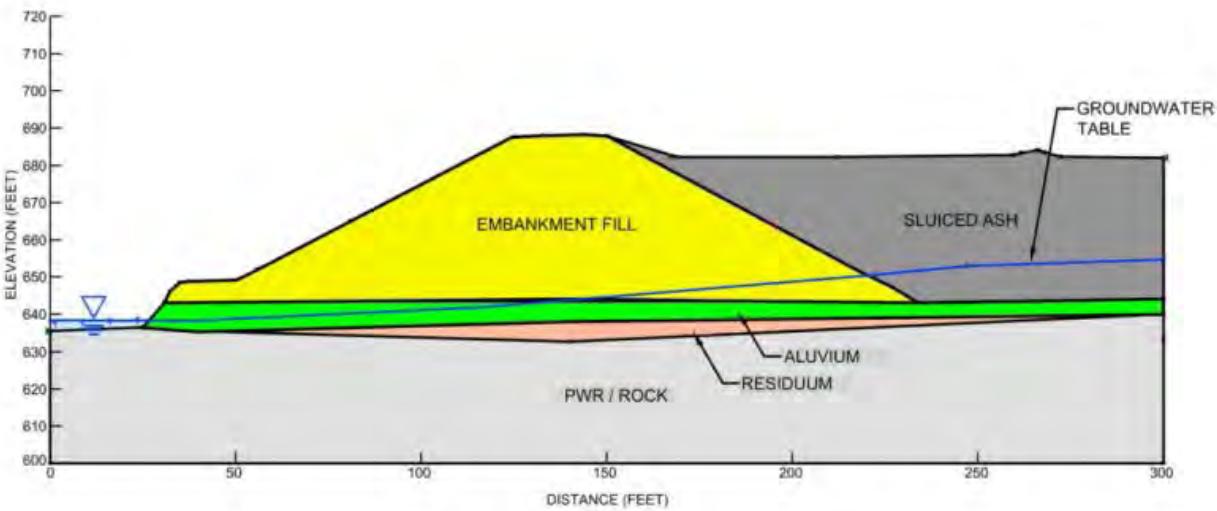


Figure 7: IAB Existing Cross Section C-C

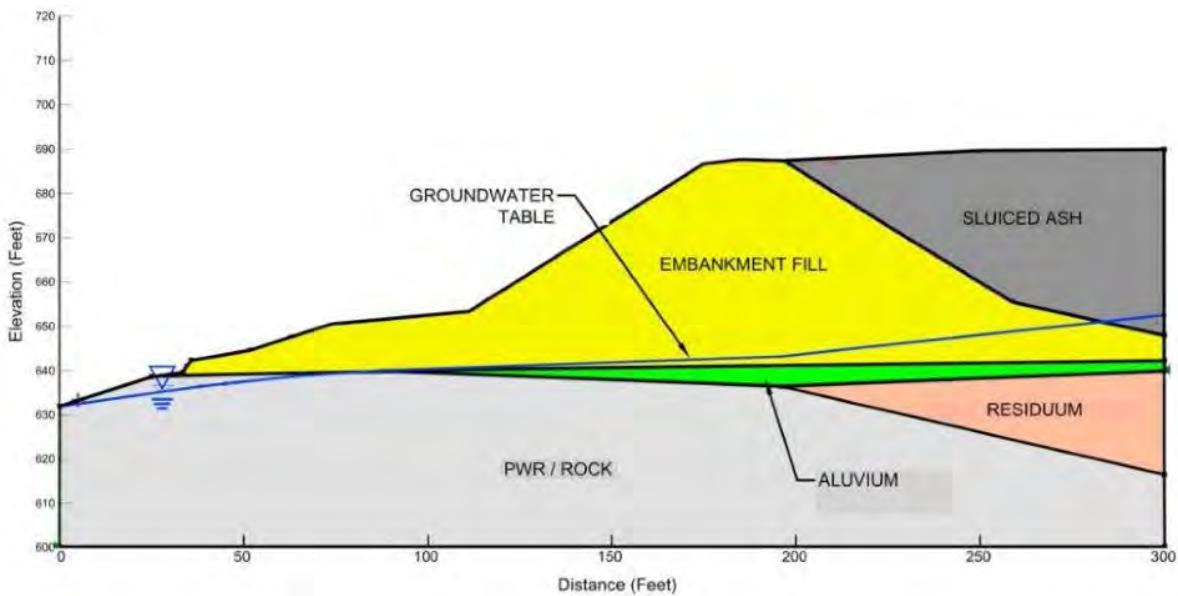


Figure 8: IAB Existing Cross Section D-D

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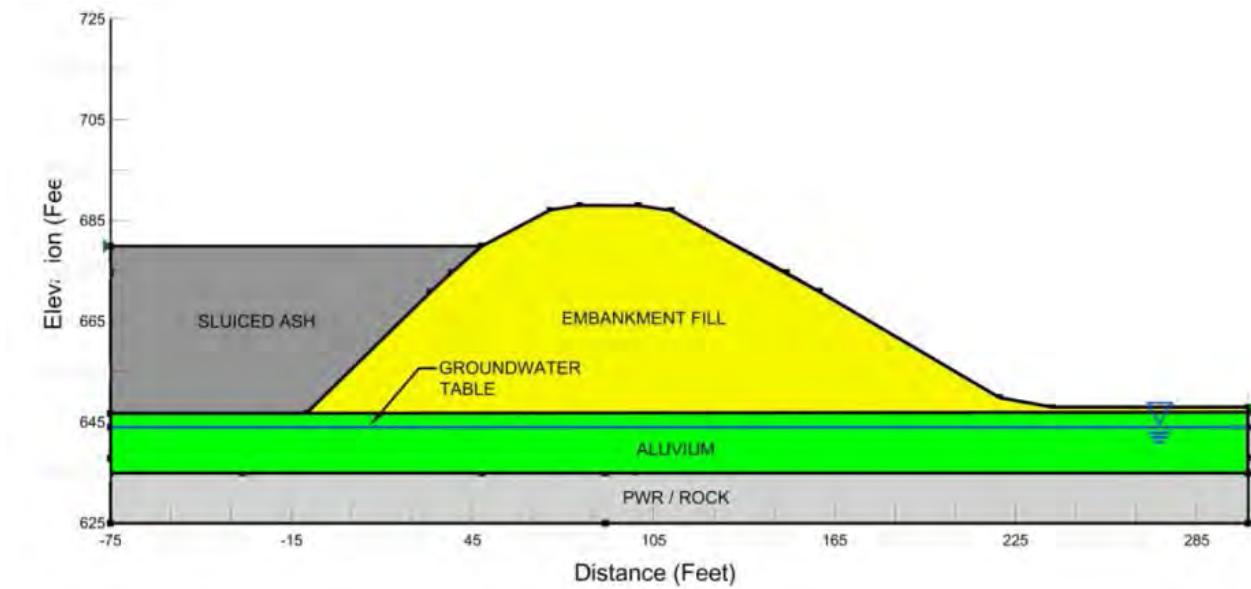


Figure 9: IAB Existing Cross Section E-E

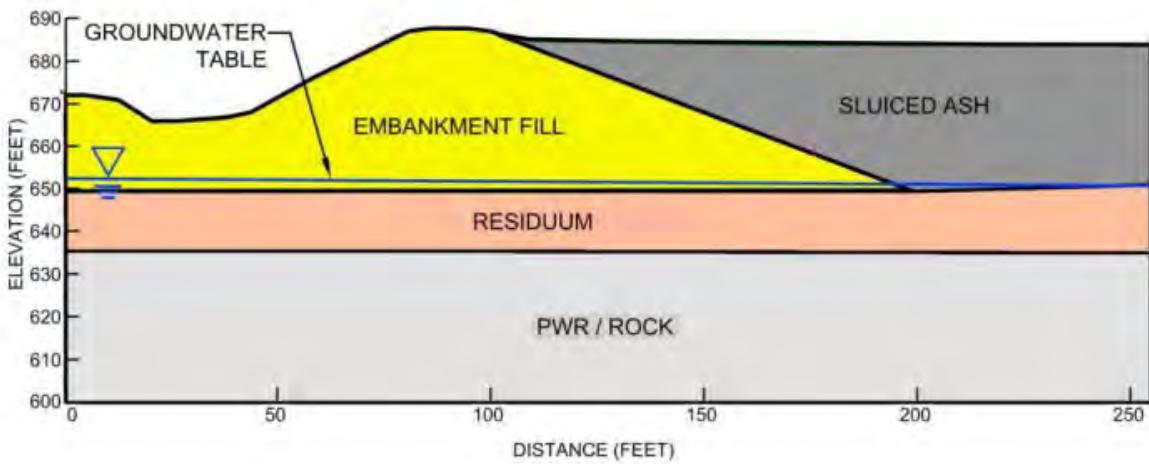


Figure 10: IAB Existing Cross Section 1-1

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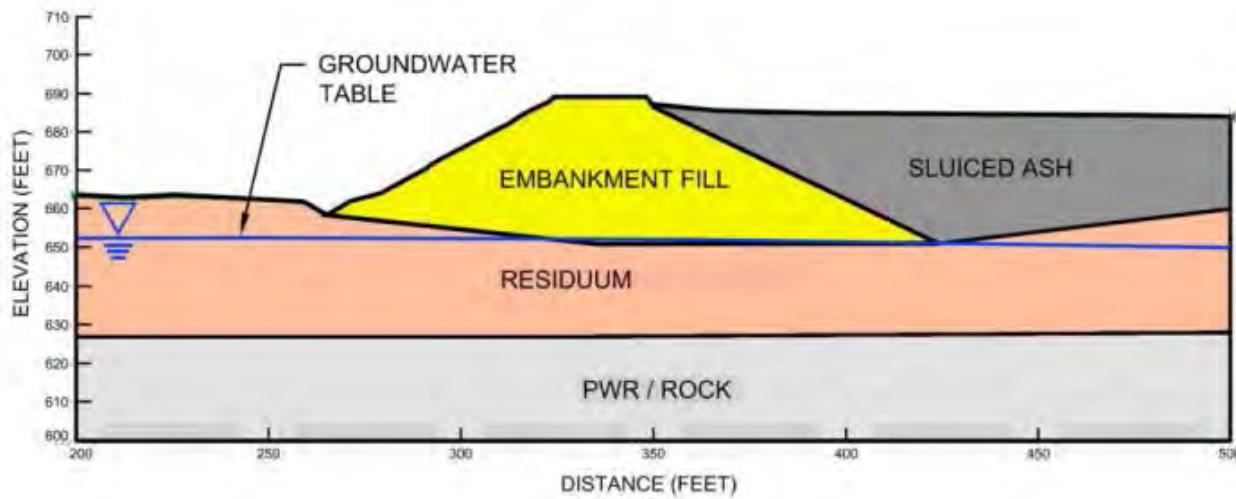


Figure 11: IAB Existing Cross Section 2-2

Stability of Existing Conditions

S&ME evaluated the stability of the IAB dike and the liquefaction potential of embankment/foundation materials beneath the existing dike. Stability was evaluated for both steady-state and seismic loading conditions. The factors of safety for the critical failure surface were compared to the United States Army Corp of Engineers (USACE) published minimum factors of safety (Slope Stability Manual, 2003) consistent with current engineering state of practice. The results of global stability analyses show that the existing dike meets or exceeds the recommended minimum factors of safety for steady state seepage (1.5) and seismic (1.0) loading conditions for the locations evaluated.

In addition to global stability, local stability was evaluated on sections with localized areas of relatively steep inclinations (cross sections B-B and C-C). Critical failure surface factors of safety for local stability at the locations evaluated meet or exceed the minimum factor of safety recommended for the seismic loading conditions (1.0). However, critical surface factors of safety for local stability under the steady state seepage loading condition ranged from 1.0 to 1.1, which is below the recommended minimum of 1.5, at the following three locations:

- Section B-B, lower toe area
- Section B-B, intermediate terrace
- Section C-C, toe

At these locations, the potential failure surfaces that resulted in factors of safety below 1.5 are shallow surficial sloughing surfaces. Shallow sloughing failures are not

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detrimental to the overall integrity of the dike, provided they are promptly repaired. As a precautionary action, erosion control measures have been installed to help contain and prevent the release of materials should surficial sloughing occur. Further, Duke Energy has implemented an inspection program of the dike for identification of any potential new features and changes that may occur over time. This inspection program is in place so that shallow sloughing can be identified and repaired promptly. The inspection program will continue through ash removal.

A liquefaction screening was performed by S&ME at 13 locations on the IAB dike and, based on the screening results; a post-seismic stability analysis was performed for cross section D-D to evaluate the static slope stability of the embankment following a seismic event. The post-seismic global stability analysis indicates a factor of safety of 1.2 associated with the critical failure surface generated for cross section D-D, which exceeds the industry minimum of 1.0 for post seismic instability referenced by S&ME based on Hynes-Griffin and Franklin, Rationalizing the Seismic Coefficient Method, 1984.

Stability During Ash Removal

S&ME evaluated the stability of the dike under various conditions anticipated during the ash removal process to evaluate the safe slopes of embankment fill and ash against the interior slope of the dike and limitations related to equipment and materials on the crest of the dike. Results of evaluations indicate the encroachment limitations presented in the following table will be followed during ash removal to maintain the industry standard recommended minimum factor of safety of 1.3 for construction loading. These encroachment limitations are based on existing geometry of the exterior dike and maximum slope inclinations on the interior of the dike of 2.5 Horizontal to 1 Vertical (2.5H:1V) in ash (reference Figure 12) and 2.0H:1V in embankment fill (reference Figure 13).

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Equipment Restriction Zones on Top of the Dike				
Equipment	Restricted Distance from Outside Crest	Restricted Distance from Inside Crest		
	Exterior Slope	2.0H:1V Interior Slope in Embankment	2.5H:1V Interior Slope in Ash	3.0H:1V Interior Slope in Ash or Embankment
Tracked (16 psi maximum distributed track load)	5 ft.	5 ft.	5 ft.	4 ft.
Haul Trucks (12 kip maximum point wheel load)	13 ft.	17 ft.	19 ft.	4 ft.
Stockpiles (stone, soil, etc.) – Maximum height of 5 feet	5 ft.	5 ft.	5 ft.	5 ft.

Considering the stated limitations, it will not be possible to operate some equipment on top of the existing dike at the current crest elevation. However, as the dike is lowered, the width will increase eventually resulting in a condition where the limitations could be satisfied. Should unanticipated slope configurations or equipment loading conditions be encountered during construction, they will be evaluated at that time.

Clearing of vegetation on the outside slope of the IAB dike will be limited to cutting the trees. Stumps and root systems will remain and only be removed during excavation of the dike where needed.

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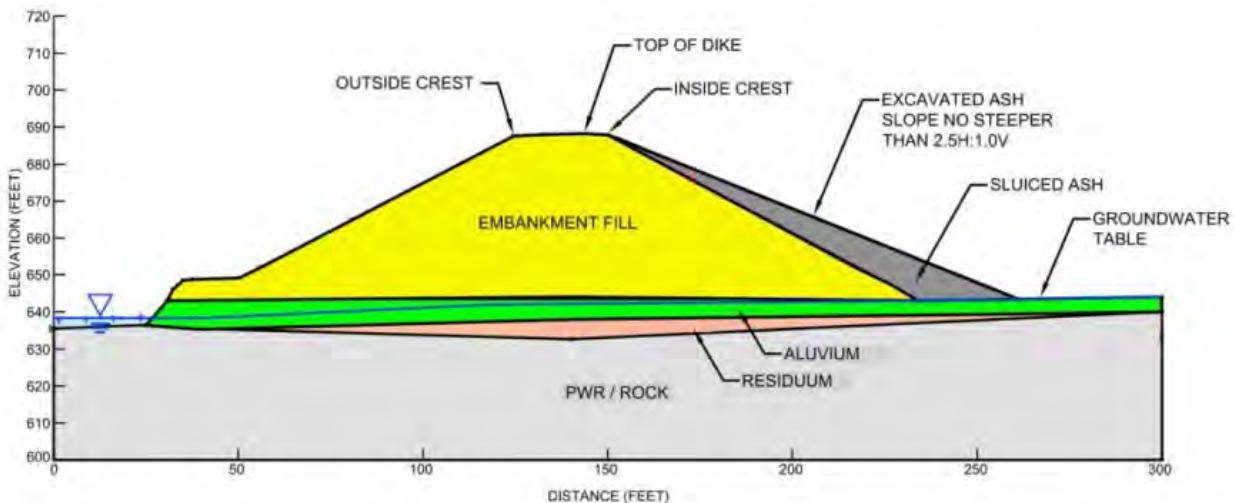


Figure 12: Ash Removal Adjacent to IAB Dike

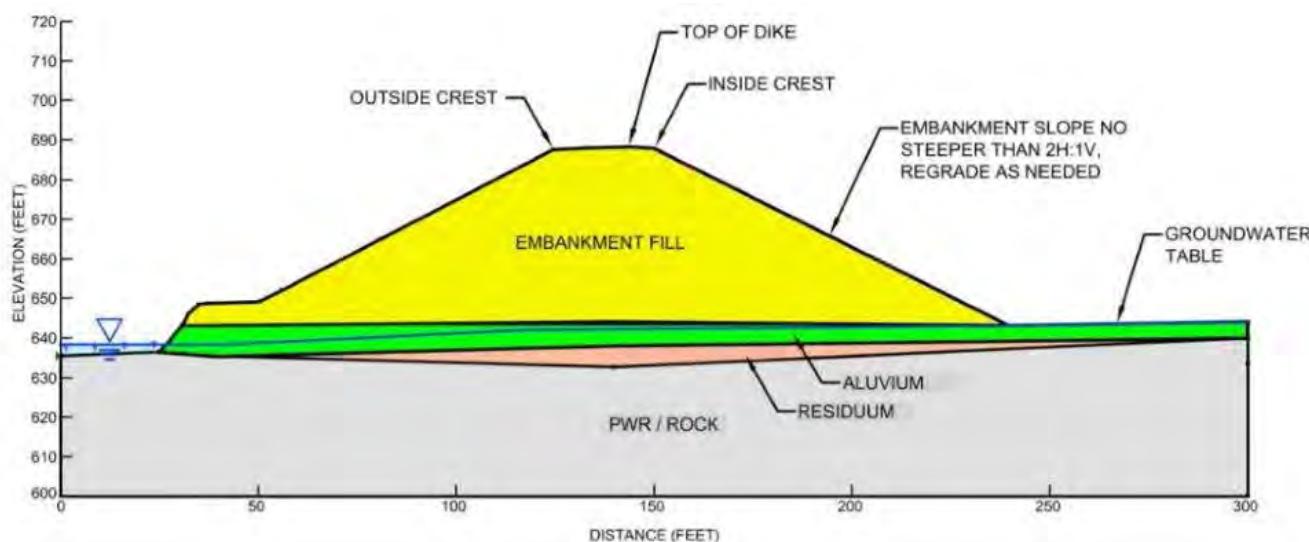


Figure 13: Complete Ash Removal Adjacent to IAB Dike

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Ash Fill Area

The ground surface elevation of the Ash Fill Area ranges from a high of approximately 760 feet msl at the southern portion to a low of approximately 650 feet msl at the northeastern portion near the Saluda River. A relatively steep bank traverses a portion of the site in a north-south orientation; however, the majority of the existing slopes in the Ash Fill Area range from approximately 50H:1V to 4H:1V. Similar grades are estimated to exist at the bottom of the fill area.

No stability analyses were performed due to the existing and anticipated bottom grades of the fill at 7H:1V or less. These grades do not offer a risk for slope stability failures for the ash and cover soils known to exist in the Ash Fill Area.

VIII. Provisions for the Safe Removal of the Ash

Environmental, Health, and Safety

Duke Energy is committed to the health, safety, and welfare of employees, contractors and the public and to protecting the environment and natural resources. During all phases of the Plan, the Company and its contractors will follow the Duke Energy Safe Work Practices; the ABSAT Environmental, Health, and Safety (EHS) supplement document; Occupational Safety and Health Administration (OSHA) standards; and any additional applicable requirements. Occupational health and safety expectations include oversight and continuous improvement throughout the project.

The project will include comprehensive environmental, health and safety plans encompassing all aspects of the project work including at the Site, in transit, and at the final destination as needed. As required by the Consent Agreement, a project-specific Health and Safety Plan (HASP) has been submitted to SCDHEC concurrent with, but under separate cover from this Ash Removal Plan.

In addition to adhering to applicable environmental, health and safety rules and regulations, Duke Energy and contractors will focus on ensuring the safety of their employees, the public, and the environment throughout the project by developing and implementing the plans listed below. As discussed above, the HASP has been prepared and submitted to SCDHEC under separate cover from this Ash Removal Plan. The remaining plans listed below will be prepared and finalized before contractor mobilization.

- Contractor Work Plan: including definition of work requirements; and description of the sequence all major on-site work activities and associated processes/procedures from mobilization through demobilization.

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- Health and Safety Plan (HASP): focused on identification and evaluation of potential hazards of the Site and work and development of procedures to mitigate, if not eliminate these hazards; and determination of applicable health and safety work rules and associated requirements for work practices and personal protective equipment. The plan will include Job Safety Analyses (JSAs) and Safety Assessments for each definable feature as well as procedures in the event of an on-site incident/emergency to include potential impacts from severe weather.
- Environmental Compliance Plan: is a compilation of several plans that focuses on the protection of the environment and surrounding communities during the excavation activities. These plans include the Fugitive Dust Control and Air Monitoring Plan, Dike Inspection Plan, Ash Spill Response Plan, Amendment to Existing Site SWPPP, and Spill Prevention Control and Countermeasures (SPCC) Plan.
- Transportation Plan: will detail the on and off-site traffic control requirements and procedures that will be followed during Site activities. The plan will address truck inspections and maintenance requirements, operator requirements, and on-road safety rules.
- Quality Assurance/Quality Control Plan: provides a systematic management approach and procedures for planning, implementing, controlling, and assessing work to ensure that the results produce an end product that satisfies technical, administrative, regulatory, and quality objectives for the completion of the project.
- Communications Plan: describes the project organization and lines of communication. The Communications Plan details the internal and regulatory communications and reporting requirements for the project as well as on-site communication procedures.

Sequence of Ash Removal

Ash removal will be initiated in the IAB, followed by the work in the Ash Fill Area. Depending on site conditions and the work sequence, the contractor may, at times, work in both areas simultaneously.

Sequence of Ash Removal - Inactive Ash Basin

Ash will be removed from the IAB as shown in the drawing package titled “Ash Removal Concept Plans” included in Appendix A. Construction equipment access will be limited to the areas approved by the Company and will comply with the equipment encroachment restrictions to meet minimum slope stability safety factors as detailed in Section VII, Stability Analysis.

W.S. Lee Steam Station – Ash Removal Plan

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The ash removal process will begin in the IAB with removal of ash in the northwestern corner as needed for construction of a contact water collection basin. Ash removal will then be sequenced from the contact water collection basin to the east to remove the higher elevations of ash material inside the basin and maintain positive drainage to the contact water collection basin. The contact water collection basin size, depth, and location will be adjusted in coordination with lowering of the northern dike as ash is removed to limit potential impoundment storage to less than 50 acre-feet. Other areas of the dike may also be lowered to improve access and stability. However, the majority of the dike that does not contain ash will remain in place to aid in storm water management and minimize Site changes prior to future implementation of the Closure Plan required by the Consent Agreement.

Dike material that is removed and does not contain ash will be segregated and stockpiled for reuse in future Site grading, restoration, and closure. Interim phases of ash excavation will include construction of internal access roads, use of stabilization mats, and dewatering of ash with entrapped water after removal of the upper dry ash.

Contact water collection basin size, depth, and location will be dynamic, modified during the course of the work as needed to facilitate water management while limiting potential impoundment storage to less than 50 acre-feet. Operations will be monitored to ensure that trucks and equipment do not cause excessive rutting, cracking or deformation or any dam stability issues. Damaged areas will be repaired.

The northern dike will be lowered in a sequential process concurrent with removal of ash from inside the IAB until the comingled layer of soil and ash has been fully removed, based on visual confirmation. After this point, potential impoundment storage will be limited to less than 50 acre-feet in one of the following ways:

- Continued lowering of the northern dike concurrent with removal of ash from inside the IAB as shown on the drawings included in Appendix A, or
- Filling low areas within the IAB where ash removal is complete with soil from the dike or other approved backfill material

Ash Removal Concept Plans are included in Appendix A which depicts the site layout, access location, existing grades, grades following ash removal, and erosion and sediment control plans.

Sequence of Ash Removal - Ash Fill Area

Ash will be removed from the Ash Fill Area as shown in the drawing package titled “Ash Removal Concept Plans” included in Appendix A. The ash removal process will begin with construction of a contact water collection basin located at the northern corner of the

W.S. Lee Steam Station – Ash Removal Plan

February 11, 2015

Ash Fill Area and with construction of diversion ditches to prevent run-on from adjacent areas and run-off to adjacent areas. Ash removal will be sequenced from the contact water collection basin to the south, maintaining positive drainage to the contact water collection basin. A diversion ditch will be constructed on the east side of the ash fill area to prevent run-off to downstream areas and direct contact water to the contact water collection basin. Water collected in the contact water collection basin will be conveyed to the yard sump via a pipe bored under Lee Steam Plant Road or by trucks.

As ash removal is completed in individual areas, they will be stabilized and the contact water collection basin may be relocated, as practical, to eliminate the need for conveying contact water through completed areas.

Conventional construction equipment will be used to remove dry ash; wet ash is not anticipated in the Ash Fill Area. Interim phases of ash excavation will include construction of internal access roads and relocation of the contact water collection basin, if needed, to facilitate the work.

Ash Removal Concept Plans are included in Appendix A which depicts the site layout, access location, existing grades, grades following ash removal, and erosion and sediment control plans.

Sampling and Analyses During Excavation

Routine sampling and analysis of ash will commence upon excavation and transportation of ash and completed when all ash has been visually removed. Sampling will be performed by a qualified individual at a minimum frequency of one sample per calendar month. If during a calendar month, the total amount of transported ash is expected to exceed 50,000 tons, a minimum of 2 samples will be collected. Analyses of the ash will be performed by a certified laboratory. The following analyses will be conducted on samples at the frequency specified above:

- Toxicity characteristic leaching procedure (TCLP): Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
- Synthetic Precipitation Leaching Procedure (SPLP) and Totals: Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chloride, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, pH, Phosphorus, Potassium, Radium 226 and 228 (combined), Selenium, Silver, Sodium, Sulfate, Total Dissolved Solids (TDS), Thallium, Zinc

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Excavation of the ash will continue until a visual confirmation that all ash and co-mingled ash/soil material has been removed. Confirmation sampling will be performed on a 100 foot grid (minimum) by advancing hand auger borings or excavating test pits to a minimum depth of 2 feet below the surface of the excavation. Excavated soils will be examined utilizing methods outlined in ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Should material samples be encountered that cannot be definitively identified as soil using the process outlined above, the sample will be further evaluated under a microscope or the questionable soil will be excavated and disposed. Additional sampling and testing of the soils to determine possible horizontal and vertical contamination will be outlined in the Assessment Plan.

Non-Ash Material

If non-ash materials are discovered during ash removal activities, work in that area will be stopped, temporarily relocated to another area, and the Duke Energy environmental team will be contacted to perform the appropriate assessment(s) to determine the nature and the extent of the non-ash related impacts. Depending upon the material encountered, the area will either be delineated and segregated for profiling and proper disposal, or placed directly into roll-off containers for proper disposal. If required, Hazardous Waste Operations and Emergency Response (HAZWOPER) crews will be mobilized to the site to perform the excavation activities. The appropriate SCDHEC department will be contacted if these areas are discovered and the plan for proper removal and disposal will be discussed. Non-ash related areas will be documented on excavation drawings and information recorded will include, but not be limited to, the material encountered, the dimensions with coordinates of the excavated area, the health and safety protocols used to protect human health and the environment during the execution of these activities, a summary of the sample and confirmation analytical results, and copies of the appropriate manifests.

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IX. Management of Storm Water During the Project

Storm water management during ash removal in the IAB and Ash Fill Area will commence with installation of initial erosion, sedimentation and control Best Management Practices (BMPs) as indicated on the drawings included in Appendix A. These drawings are conceptual; details of the sequencing, grading, contact water collection basins, and erosion control measures will be defined in upcoming additions to the W.S. Lee Storm Water Pollution Prevention Plan (SWPPP).

After installation of the initial BMPs, the IAB area inside the perimeter dike will be cleared and ash removal will be performed as needed to facilitate construction of a contact water collection basin. This basin will be excavated in the northwest corner of the IAB and a pump and piping system will be installed to convey collected water to the existing yard sump.

After installation of the same initial BMPs, the Ash Fill Area will be cleared and a contact water collection basin, pump, and associated piping to the existing yard sump will be installed. Construction of perimeter diversion ditches and diversion dikes or berms will take place to prevent run-on from adjacent areas and run-off from excavations to adjacent areas. Piping to convey water from the contact water collection basin to the existing yard sump will be installed underneath Lee Steam Plant Road. Alternatively, the water may be transported to the yard sump by truck.

Ash excavations in the IAB and Ash Fill Area will be phased and graded to provide positive drainage to their associated contact water collection basins. Removed ash storage areas will be located to facilitate dewatering of ash with entrapped water. Contact water that accumulates in each of the basins will be pumped to the yard sump and ultimately to the Primary Ash Basin within the current permit restrictions. Dewatering will be performed simultaneously with the ash removal in the IAB and the Ash Fill Area.

In case pumping the contact water to the Primary Ash Basin is not allowed or not achievable in the initial phase of the ash removal project, an alternate approach will be to pump and haul the contact water to an approved facility.

Contact water is anticipated to be surface water, which accumulates during rainfall events and seepage from stockpiles of ash with entrapped water. No impervious area will be added within the disturbed area of the site; therefore, the post-construction runoff volume will be less than or equal to the pre-construction runoff volume.

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February 11, 2015

The existing W.S. Lee Storm Water Pollution Prevention Plan (SWPPP) will be modified to include the erosion, sedimentation and controls that will be installed, inspected, and maintained during ash removal in the IAB and Ash Fill Area.

The following BMPs are anticipated to be installed in the IAB and the Ash Fill Area in accordance with the latest version of the South Carolina SCDHEC Storm Water Management Handbook:

- Stabilized Construction Entrance
- Truck Wash
- Contact Water Collection Basin
- Silt Fence (wire backing or chain link reinforcement)
- Construction Dewatering
- Surface Roughening
- Dust Control
- Polyacrylamide (PAM)
- Internal Diversion Ditches
- Mulching
- Erosion Control Blankets
- Temporary and Permanent Seeding

Areas of the IAB dike to be removed to facilitate ash removal or access shall be stabilized with erosion control measures prior to, during, and after excavation activities as required by the additions to the W.S. Lee SWPPP.

The contact water collection basins will stay in place after ash removal until completion of assessment and, if needed, during remedial activities.

Ash storage, handling, and loading areas will be located as far as practical from storm water diversion ditches. In addition, soil or alternative cover materials will be used on stockpiles to secure the surface layer for sediment and dust control.

The contractor will install the E&SC measures indicated in final plans approved by SCDHEC. The Engineer of Record will review the installation prior to commencement of ash excavation and the control measures will be maintained throughout the project in accordance with the E&SC Plan.

W.S. Lee Steam Station – Ash Removal Plan

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X. Environmental Permitting Plan

The project will include excavation, transport, and disposal of ash from the IAB and Ash Fill Area. Through this Ash Removal Plan approval process, Duke Energy is seeking to confirm that all necessary approvals have been identified. The Ash Removal Plan is intended to authorize the excavation and movement of ash once the identified permits have been obtained. Duke Energy and representatives of their consultant team met with SCDHEC on November 18, 2014 to discuss the project and associated permit requirements and the resulting Environmental Permitting Plan is summarized herein.

The W.S. Lee Steam Station holds an approved National Pollutant Discharge Eliminations System (NPDES) Industrial Storm Water Permit (Permit No. SCR000000, Coverage No. SCR003705) and an associated Storm Water Pollution Prevention Plan (SWPPP) incorporating best management practices (BMPs). Based on the November 18, 2014 meeting, the existing SWPPP will be updated to include new sections addressing ash removal from the IAB and Ash Fill Area.

An area has been identified at W.S. Lee for parking trucks, maintenance equipment, and personal vehicles of the workers who will perform the ash removal. This area will need to be graded and surfaced with stone to support these needs. The parking area is remote from the ash removal areas and will therefore require a land disturbance permit from Anderson County and coverage under the South Carolina general NPDES permit for construction storm water.

As discussed in Section IX of this Plan, contact storm water will be managed during the ash removal process by collection in contact water collection basins and pumping to the existing yard sump which then pumps flows to the Primary Ash Basin. W.S. Lee holds an NPDES wastewater permit (Permit No. SC0002291) and the Company will submit a request to SCDHEC for approval to manage the contact water under this permit. It is understood that additional permitting will not be required as long as the water pumped from the IAB and Ash Fill Area during the ash removal process is managed, monitored, and coordinated with other activities at W.S. Lee to meet the requirements of the current NPDES wastewater permit. In case pumping the contact water to the Primary Ash Basin is not allowed or not achievable in the initial phase of the ash removal project, an alternate approach will be to pump and haul the contact water to an approved facility.

If required, based on the quantity of fuel storage for the ash removal, a Spill Prevention Control and Countermeasures (SPCC) Plan will be developed in accordance with 40 CFR Part 112 Oil Pollution Prevention to address the use and storage of fuels and oils.

The IAB dike is not a dam regulated by SCDHEC; therefore, breaching of the dike will not require Dam Safety approval.

W.S. Lee Steam Station – Ash Removal Plan

February 11, 2015

Diesel generators and/or pumps are likely to be used to pump water from the contact water collection basins. These point sources will be assessed to determine any air permitting requirements.

Analytical testing has been performed, and no information exists to indicate that the ash should be treated as a DOT hazardous material shipped via truck. The R&B Landfill may require collection and analysis of additional samples for waste profiling purposes. Therefore, if needed, this activity will be conducted early to expedite transportation and disposal activities.

If determined to be applicable to the project, measures will be implemented to address the requirements of the United States Department of Agriculture (USDA) Imported Fire Ant Program Manual. At this time, based on the decision to dispose of the ash in a permitted landfill and the location of the landfill facility, it is not anticipated that the fire ant quarantine will apply.

Groundwater wells or piezometers within the excavation areas will be properly abandoned and dispositioned with SCDHEC. The wells and piezometers may be kept in service initially for use in obtaining groundwater level measurements but will be abandoned in advance of surrounding ash excavation to prevent damage.

Jurisdictional wetlands and streams at the W.S. Lee Steam Station have been delineated by S&ME and the ash removal process is not anticipated to impact these delineated areas. However, if potential impacts are identified as detailed design plans are completed, jurisdictional determinations will be managed through the US Army Corps of Engineers and an application package for coverage under a Section 404 general permit will be submitted. Based on S&ME's delineation of jurisdictional areas, Section 404 individual permitting will not be required for this project.

Lee Steam Plant Road is a state route, SR-S-4-178. As such, South Carolina Department of Transportation (SCDOT) encroachment permits must be obtained for work in the right-of-way of Lee Steam Plant Road, which is expected to include temporary access into the Ash Fill Area and potentially a pipe crossing for water management. Work will be initiated in the IAB and later move to the Ash Fill Area. The encroachment permits will be obtained prior to initiating work in the Ash Fill Area.

No additional site-specific or local requirements have been identified.

W.S. Lee Steam Station – Ash Removal Plan

February 11, 2015

Permit Matrix

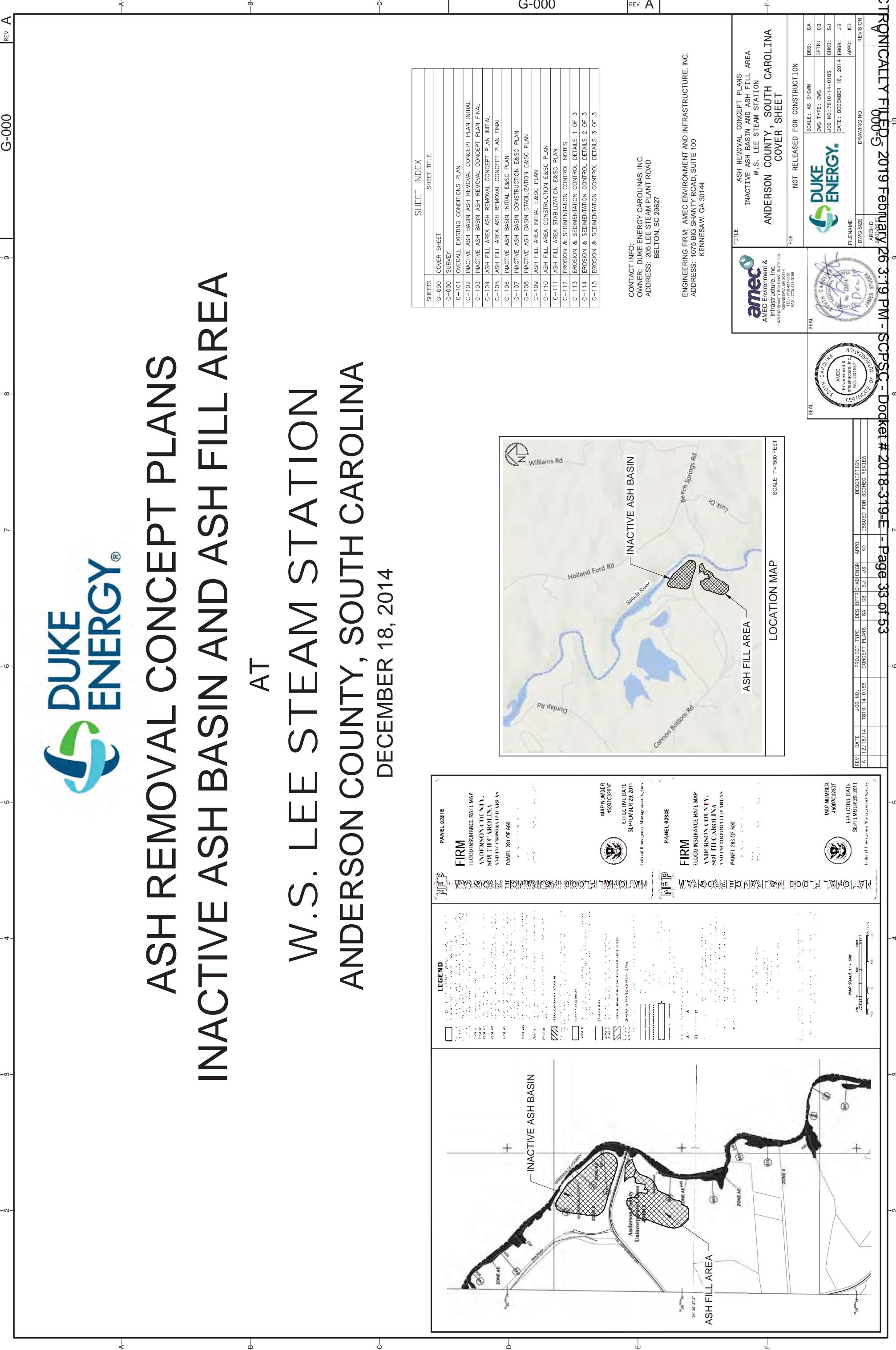
Media	Permit/Approval	Milestone/Target Date for Submittal	Reasoning
Waste (ash)	Ash Removal Plan	December 29, 2014	Required by Consent Agreement 14-13-HW for removal of ash from the IAB and Ash Fill Area.
Water	Coverage under existing NPDES Industrial Storm Water Permit	February 11, 2015	The facility holds an industrial storm water permit and an approved SWPPP. The existing SWPPP will be modified to address ash removal from the IAB and Ash Fill Area, including BMPs.
	Coverage under existing NPDES Wastewater Permit	February 11, 2015	The facility holds an NPDES Industrial Wastewater Permit. A request will be submitted to SCDHEC to pump contact water from the contact water collection basins to the existing yard sump, and ultimately the Primary Ash Basin, under this permit.
	Land Disturbance and Construction Storm Water NPDES Permit	Ash Removal Plan approval date + 45 days	A parking area may be constructed at W.S. Lee remote from the ash removal areas. If utilized, a Land Disturbance Permit, including Construction Storm Water General NPDES Permit coverage, will be required for this area.
Air	Air Permit	Ash Removal Plan approval date + 45 days, if required	Assess potential point sources paying particular attention to temporary sources such as diesel generators and/or pumps which may be used for pumping water out of the contact water collection basins
Roadways	New Driveway Permit and Water Conveyance Across State Route (SCDOT Encroachment Permits)	No less than 60 days prior to initiating work in the Ash Fill Area	A new driveway will be required to access the Ash Fill Area. In addition, a pipe may be installed under the road to convey water from the Ash Fill Area contact water collection basin to the W.S. Lee Steam Station yard sump.

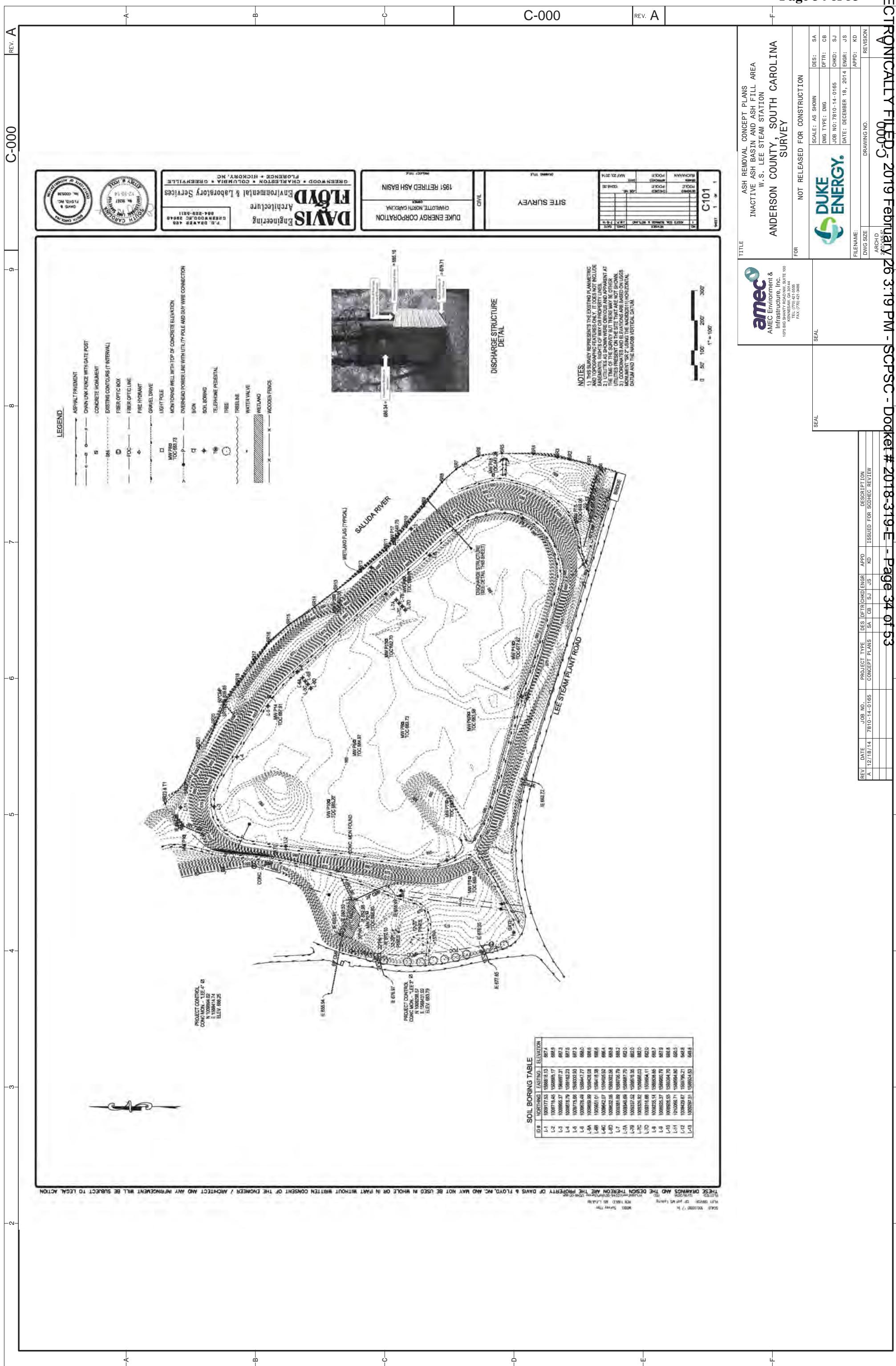
W.S. Lee Steam Station – Ash Removal Plan

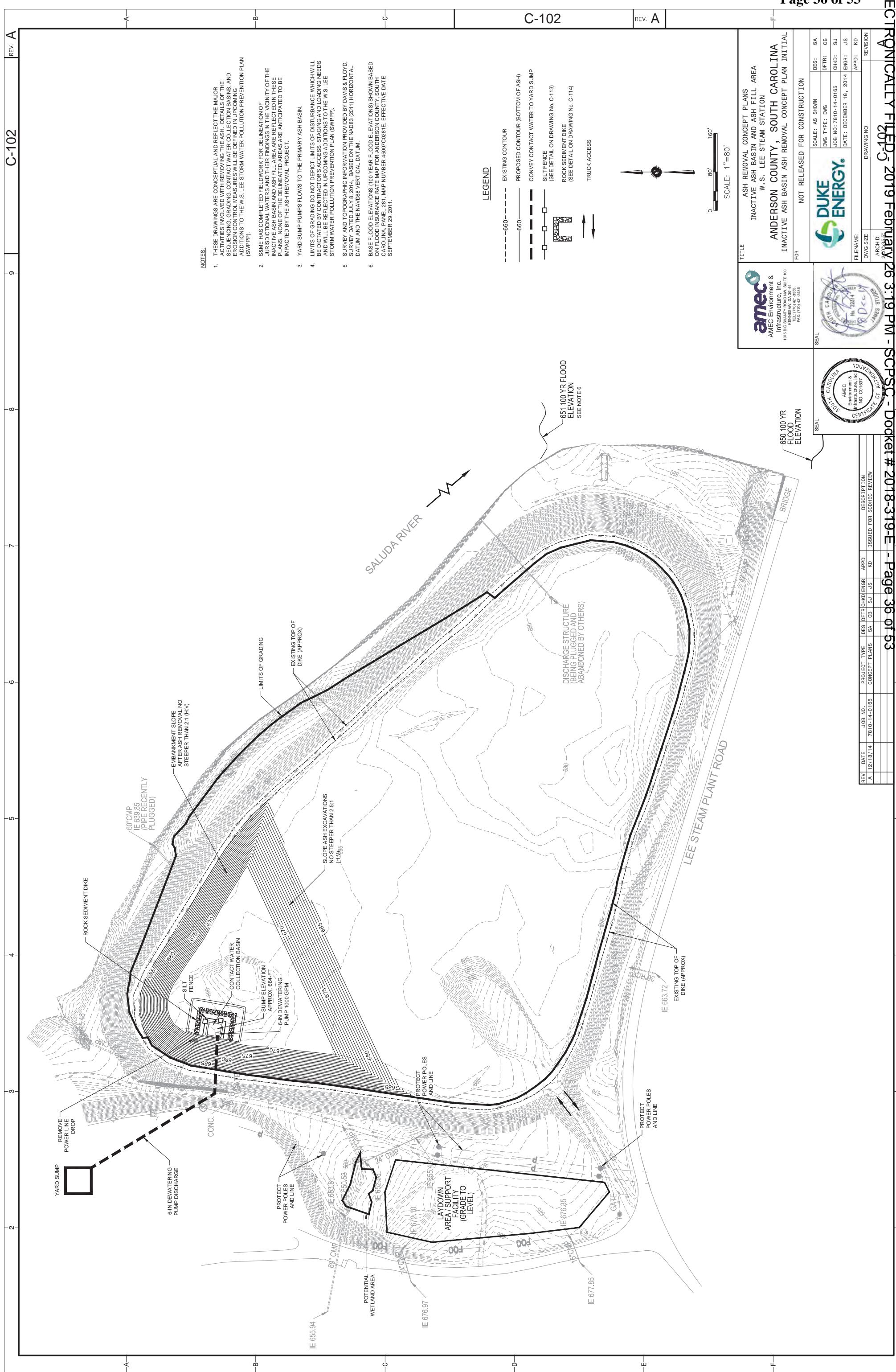
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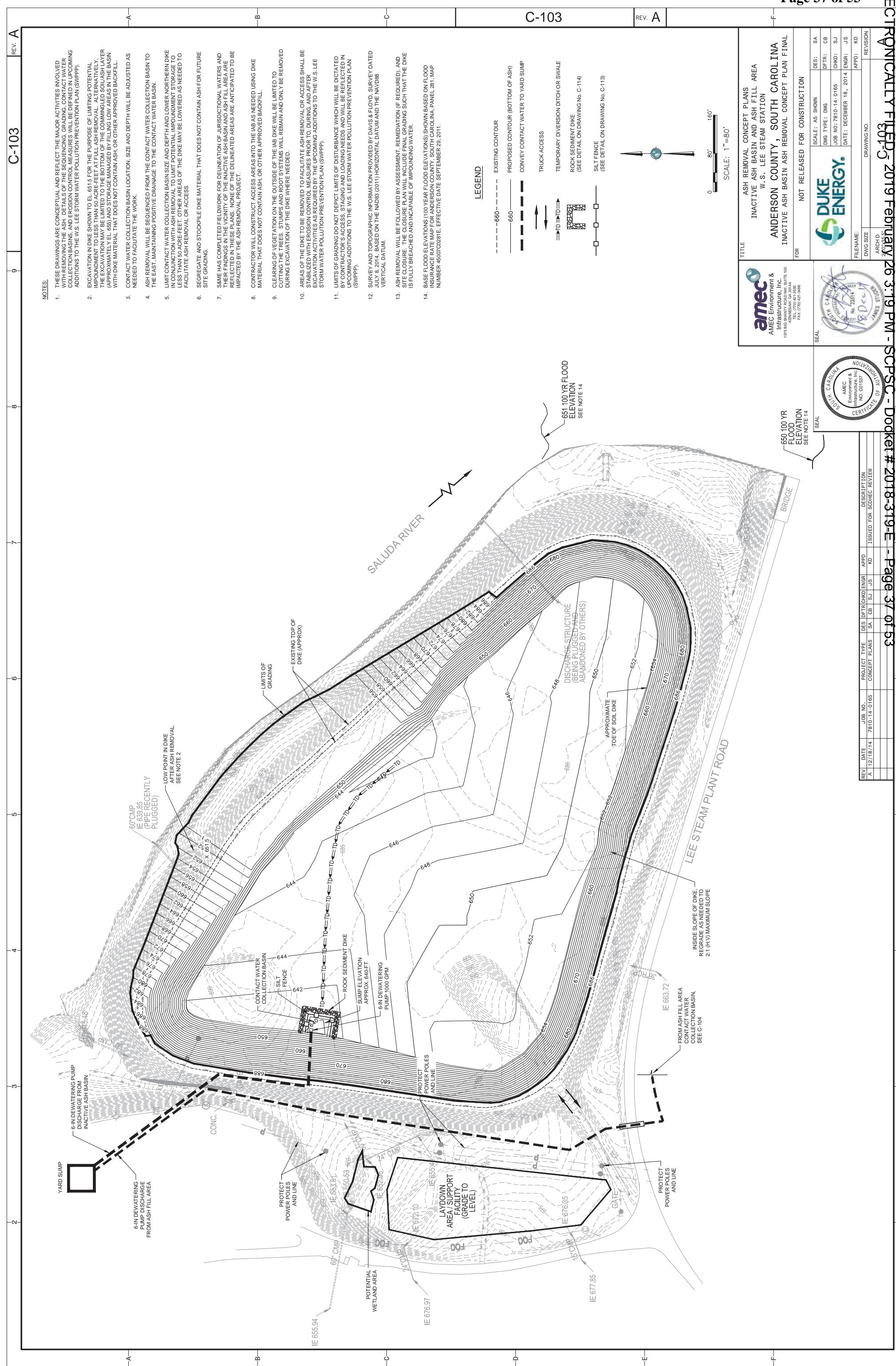
Appendix A: Ash Removal Concept Plans

AMEC, December 18, 2014







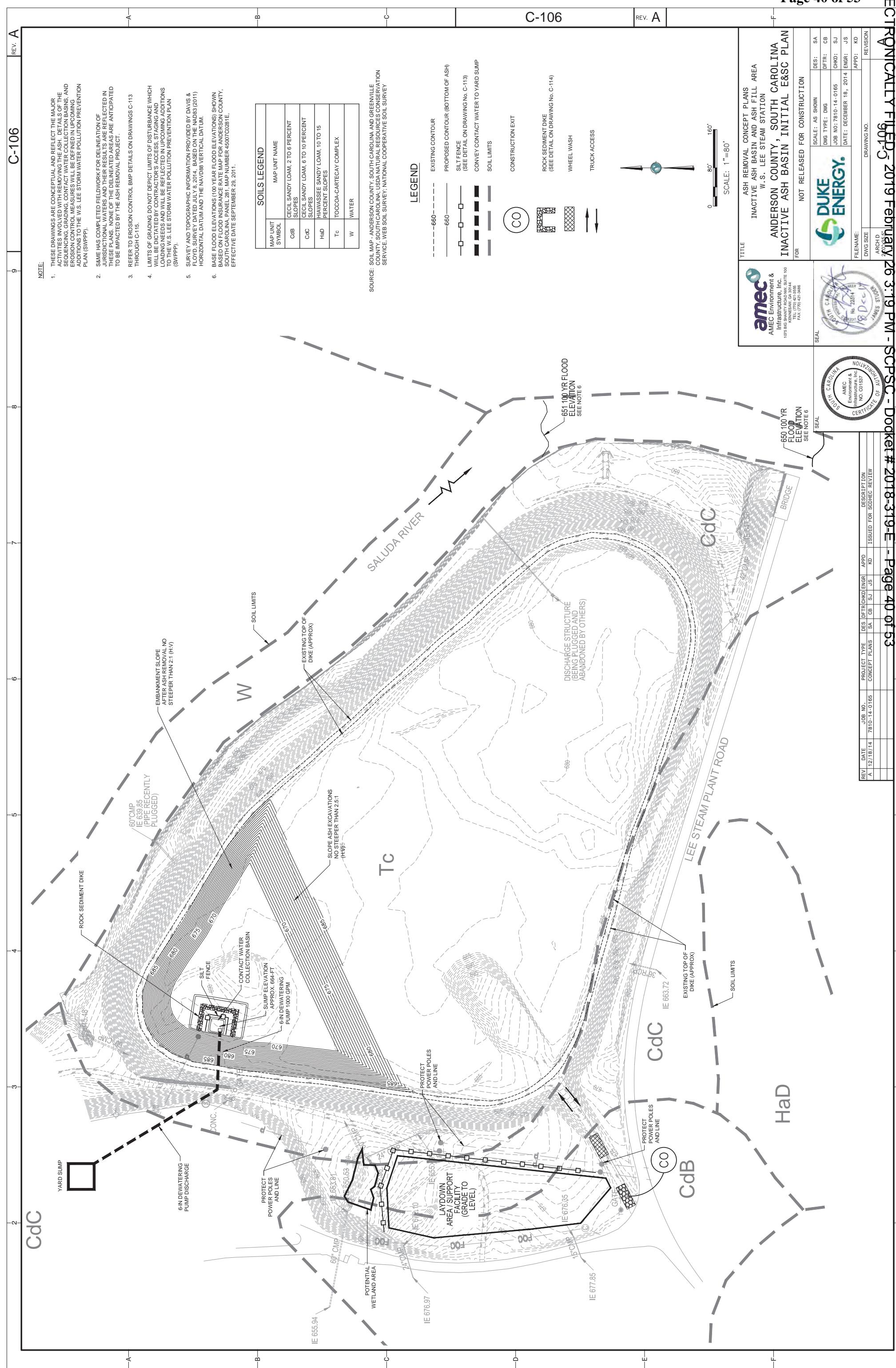


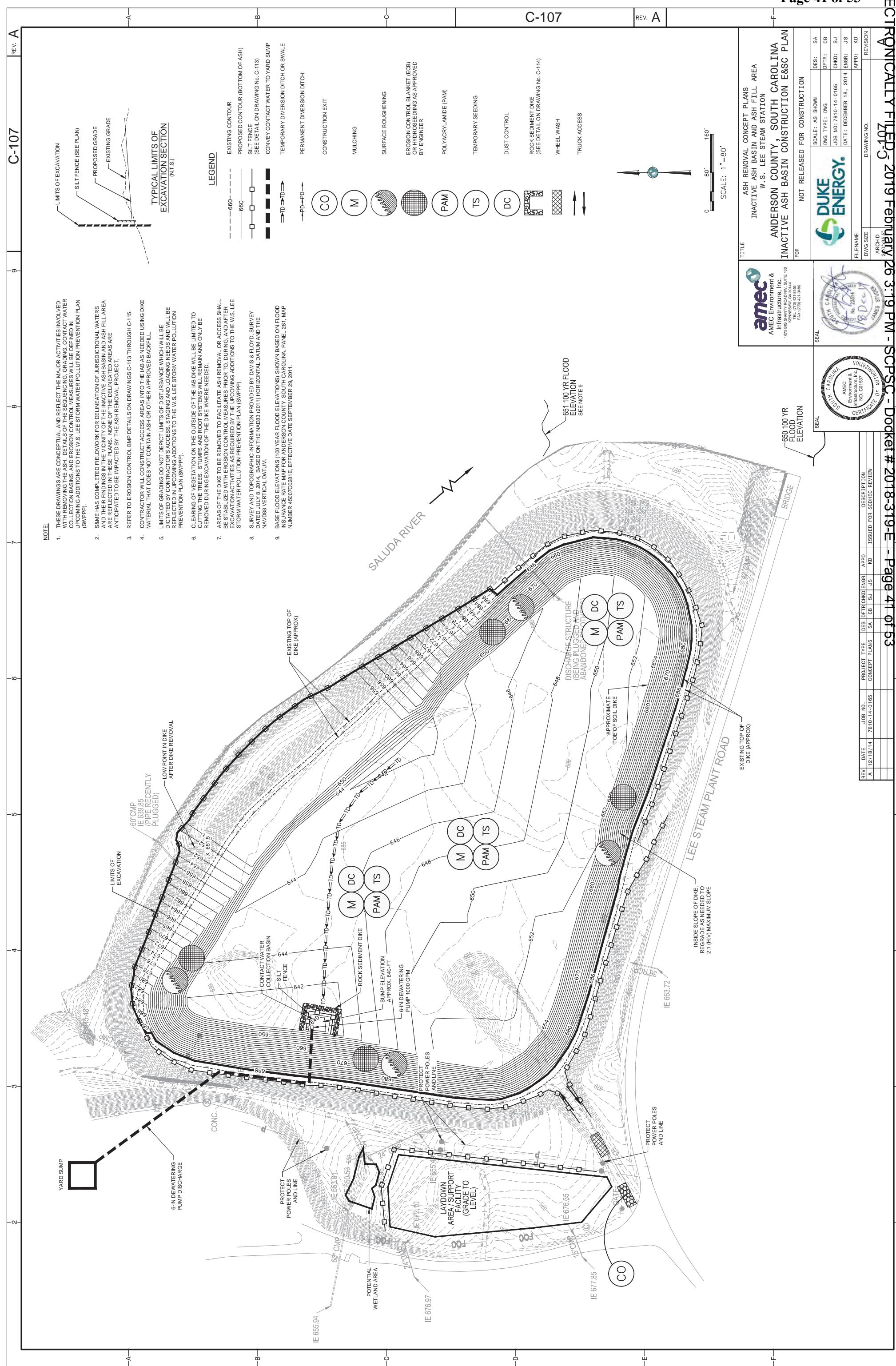


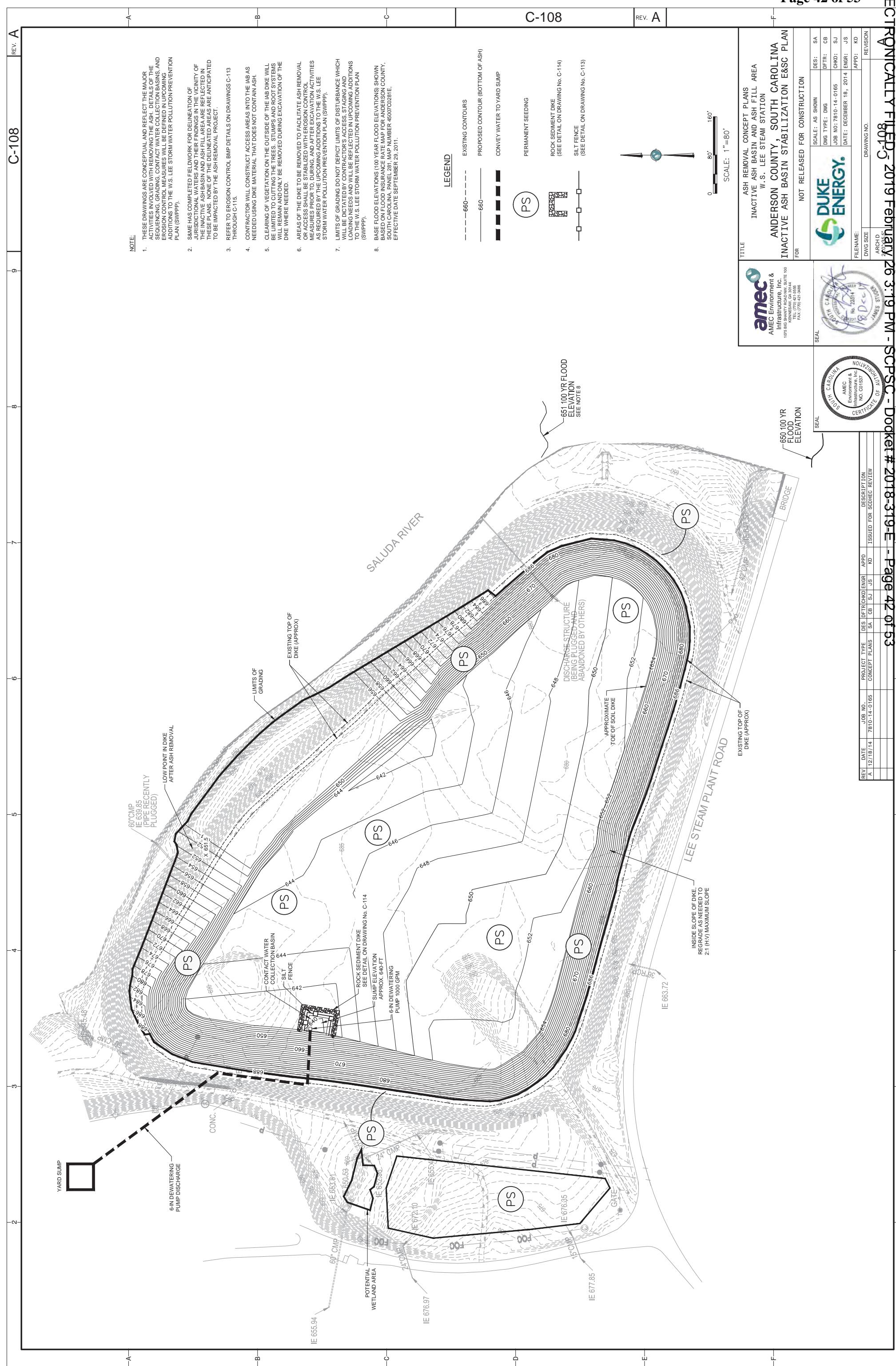
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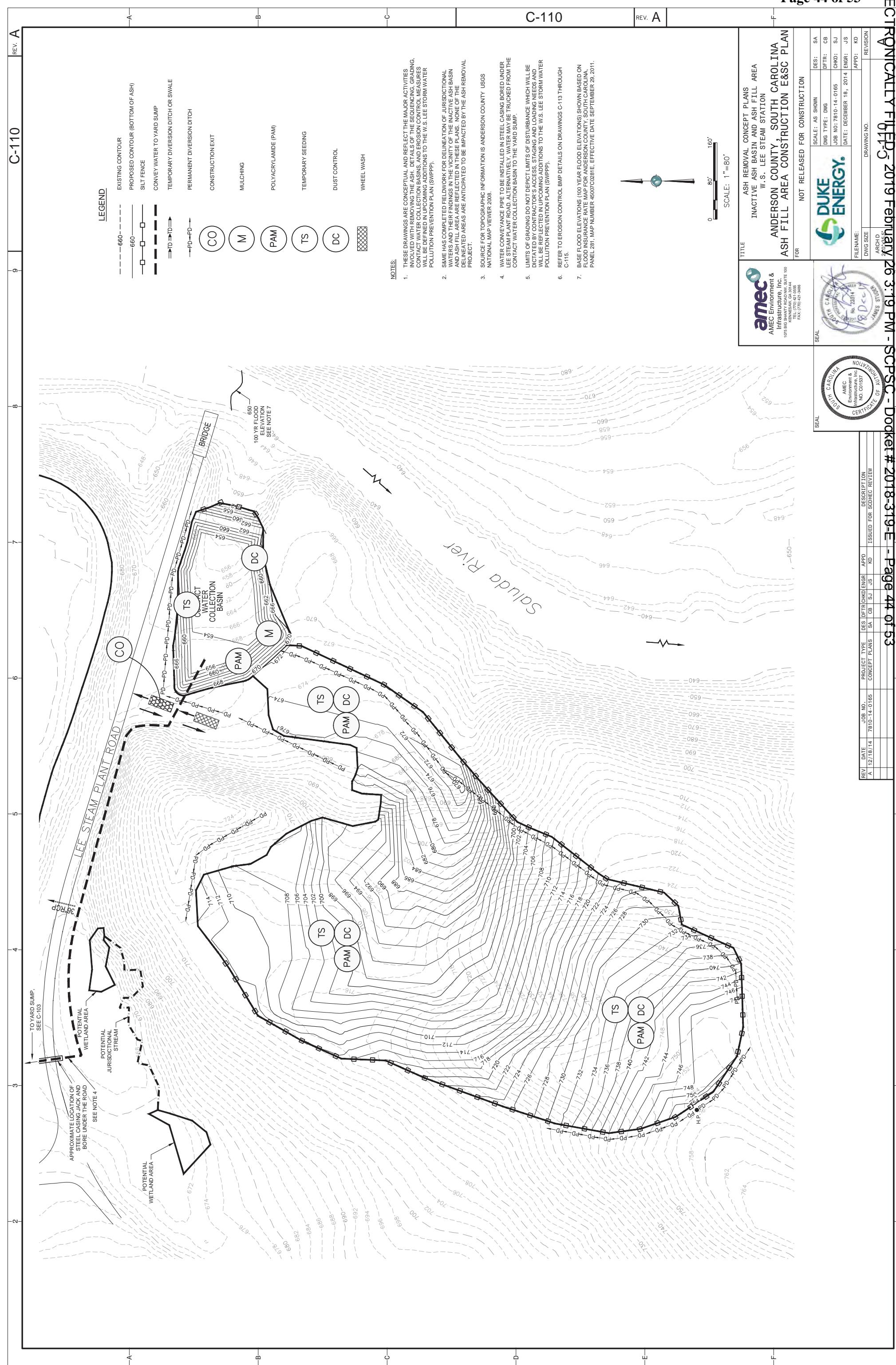
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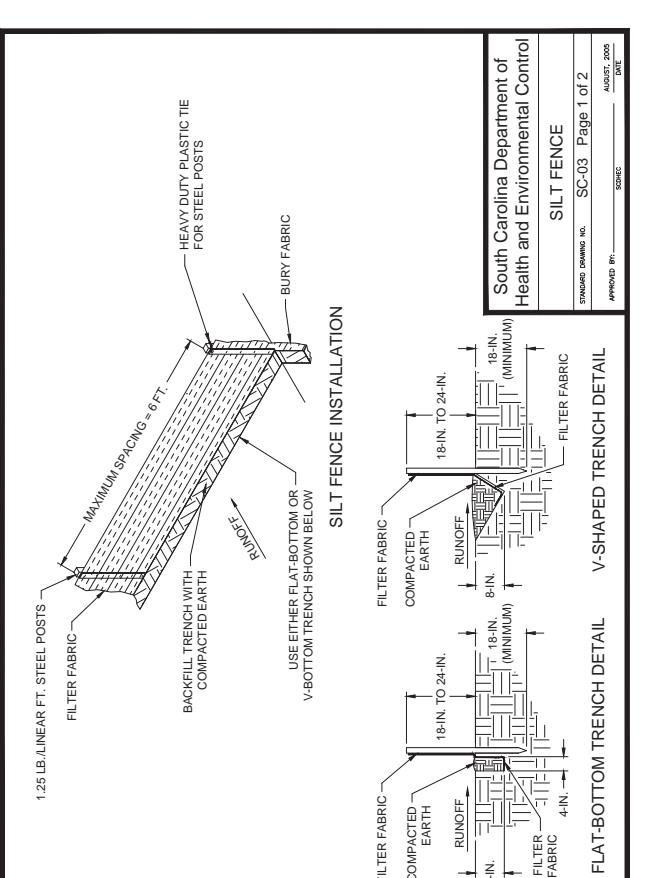








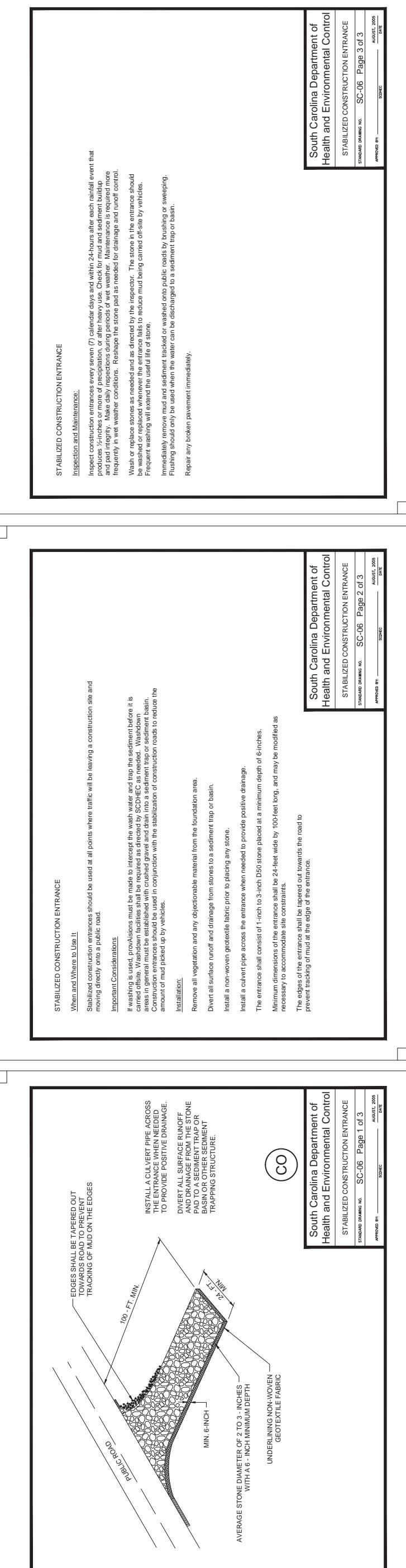
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SILT FENCE INSTALLATION

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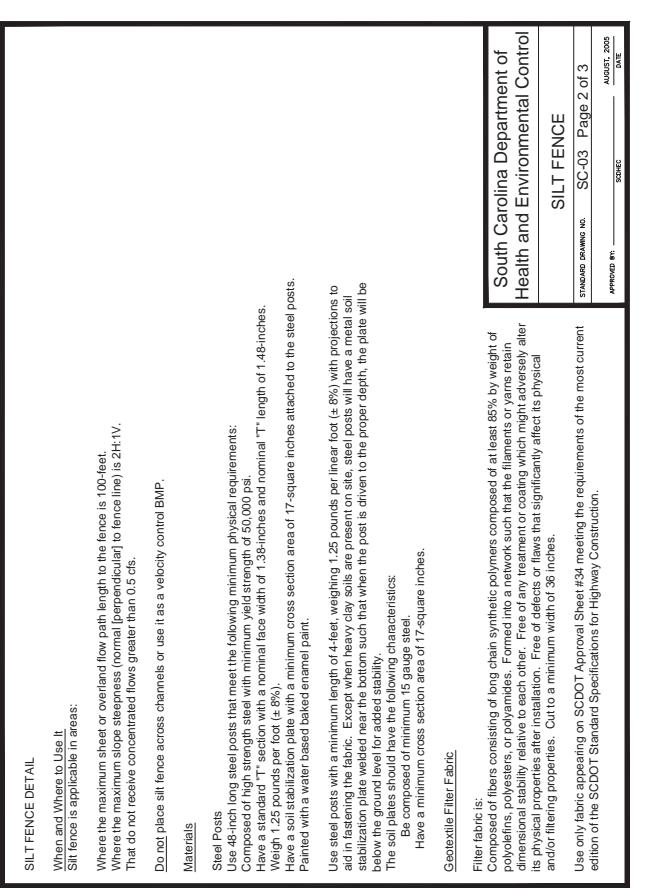
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V-SHAPED TRENCH DETAIL

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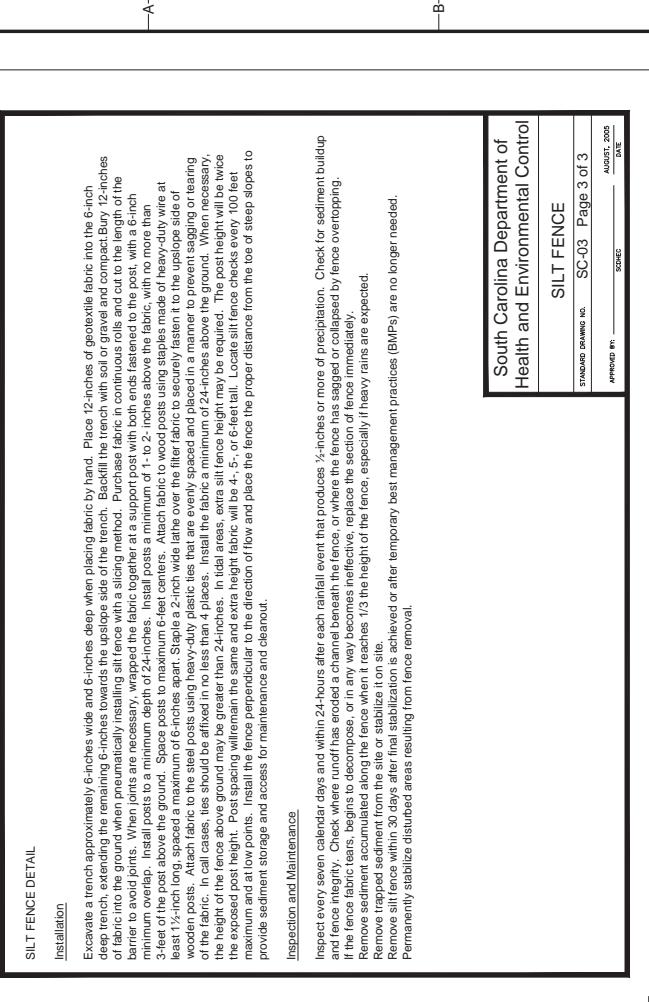
NOTE: WIRE MESH OR CHAIN LINK REINFORCEMENT WILL BE USED TO SUPPORT THE FILTER FABRIC IN SENSITIVE OR HIGH FLOW AREAS.



SILT FENCE INSTALLATION

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NOTE: WIRE MESH OR CHAIN LINK REINFORCEMENT WILL BE USED TO SUPPORT THE FILTER FABRIC IN SENSITIVE OR HIGH FLOW AREAS.



SILT FENCE DETAIL

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C

Where and Where to Use It:
Silt fence is applicable in areas:
Where the maximum sheet or overland flow path length to the fence is 100-feet.
Where the maximum slope steepness (normal [perpendicular] to fence line) is 2H:1V.
Where the maximum slope steepness (normal [perpendicular] to fence line) is greater than 0.5%.
Do not place silt fence across channels or use it as a velocity control BMP.

Materials:

Steel Posts: Composed of high strength steel with minimum yield strength of 50,000 psi.
Have a standard "T" section with a nominal face width of 1.38-inches and nominal "T" length of 1.48-inches.
Weigh 1.25 pounds per foot at .8%.
Have a soil stabilization plate with a minimum cross section area of 17-square inches attached to the steel posts.
Painted with a water based baked enamel paint.

Steel Posts: Use steel posts with a minimum length of 4-feet, weighing 1.25 pounds per linear foot ($\pm 8\%$) with projections to aid in fastening the fabric. Except when heavy clay soils are present on site, steel posts will have a metal soil stabilization plate welded near the bottom such that when the post is driven to the proper depth, the plate will be below the ground level for added stability.
The soil plates should have the following characteristics:
Be composed of minimum 15 gauge steel.
Have a minimum cross section area of 17-square inches.

Geotextile Filter Fabric:

Filter fabric is: Composed of fibers consisting of long chain synthetic polymers composed of at least 85% by weight of polyolefins, polyesters, or polyamides. Formed into a network such that the filaments or yarns retain dimensional stability relative to each other. Free of any treatment or coating which might adversely affect its physical properties after installation. Free of defects or flaws that significantly affect its physical and filtering properties. Cut to a minimum width of 36 inches.
Use only fabric appearing on SCOTD Approval Sheet #34 meeting the requirements of the most current edition of the SCDOT Standard Specifications for Highway Construction.

South Carolina Department of Health and Environmental Control
SILT FENCE
STANDARD DRAWING NO. SC-03
APPROVED BY: SCHEC DATE: AUGUST 18, 2005

C-113

REV. A

F

ASH REMOVAL CONCEPT PLANS
INACTIVE ASH BASIN AND ASH FILL AREA
W.S.-LEE STEAM STATION
ANDERSON COUNTY, SOUTH CAROLINA
EROSION & SEDIMENTATION CONTROL DETAILS 1 OF 3

DUKE ENERGY.

amec
AMEC Environment & Infrastructure, Inc.
10780 SHANAY ROAD, SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3585
FAX: (770) 421-3486

NOT RELEASED FOR CONSTRUCTION

SEAL

CERTIFICATE OF AUTHENTICATION
NO. C01537

CO

REVISION

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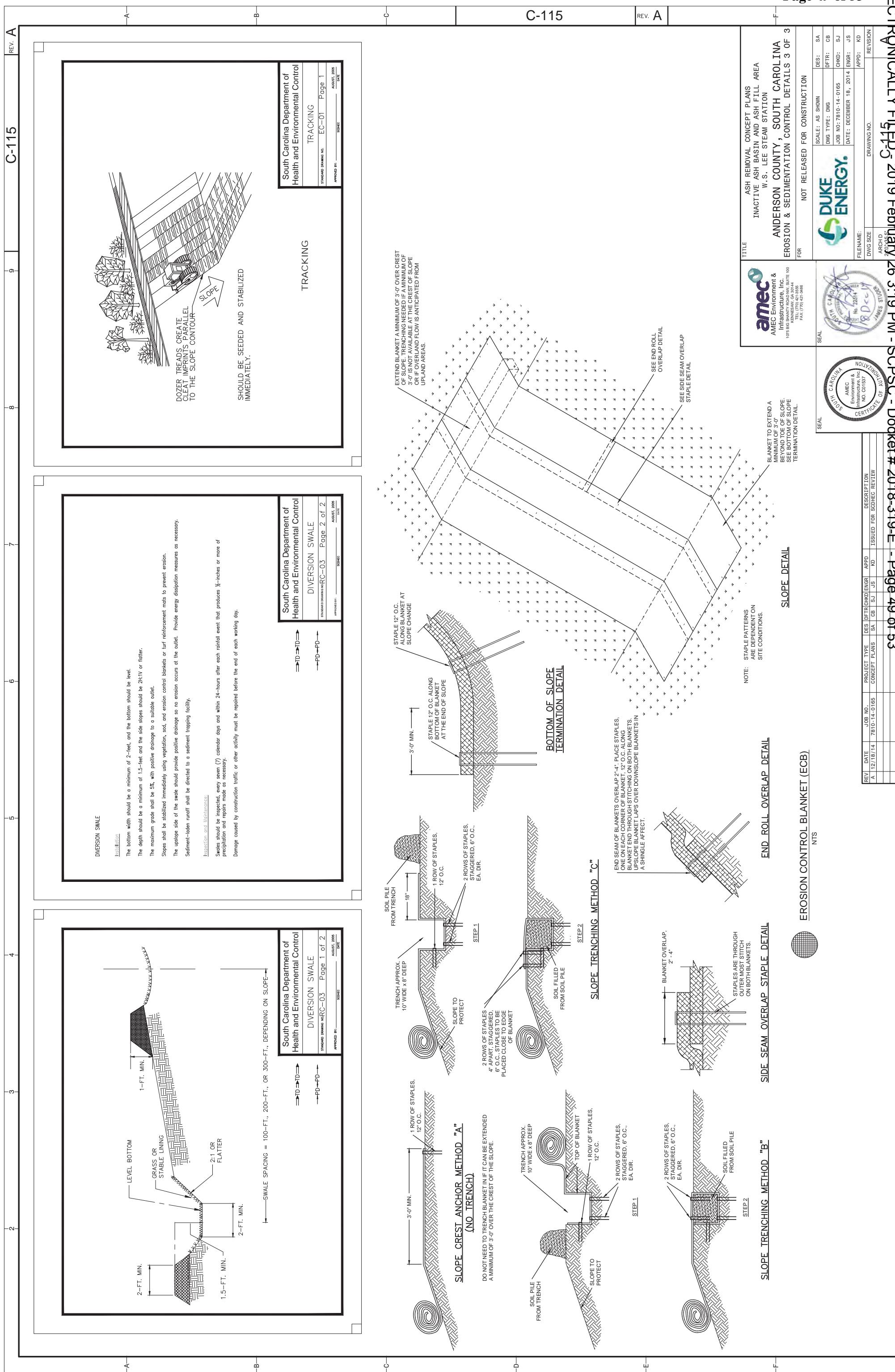
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<p>ROCK SEDIMENT DIKE</p> <p>Where applicable, or as directed:</p> <p>Rock sediment dikes are most effective in areas where sediment control is needed with minimal disturbance. They can be used as sediment control structures or diversion dikes, in low areas or areas where concentrated flow or base flow is expected. Rock sediment dikes should not be placed in Waters of the State or any other streams that have a base flow.</p> <p>A non-woven geotextile fabric shall be installed over the soil surface where the rock sediment dike is to be placed. The upstream face of the rock sediment dike shall be composed of a 1-foot thick layer of 3/4-inch D50 Riprap.</p> <p>The body of the rock sediment dike shall be composed of minimum 9-inch D50 Riprap.</p> <p>Rock sediment dikes shall have a minimum top flow length of 3-feet (2-foot flow length through the riprap and 1-foot flow length through the washed store).</p> <p>The rock must be placed by hand or mechanical placement (no dumping of rock to form the sediment dike) to achieve the proper dimensions.</p> <p>A sediment sump shall be located on the upstream side of the structure to provide sediment storage. The upstream side of the sediment sump shall have a slope of 5:1V to inhibit erosion of the sediment storage area. The minimum depth of the sediment sump shall be 2-feet. Mark the sediment cleanout level of the sediment dike with a stake in the field. Seed and mulch all disturbed areas.</p>	<p>ROCK SEDIMENT DIKE</p> <p>Where applicable, or as directed:</p> <p>The key to a functional rock sediment dike is continual monitoring, regular maintenance and regular sediment removal. Regular inspections should be done every seven (7) calendar days and within 24-hours after each rainfall event that produces $\frac{1}{2}$ inches or more of precipitation.</p> <p>Remove sediment when it reaches 50% of the sediment storage volume or when reaches the top of cleanout stake. All rock sediment dikes should be removed within 30 days after final site stabilization is achieved or after they stabilize. Disturbed areas resulting from the removal of rock sediment dikes should be permanently stabilized.</p>
<p>C-114</p> <p>REV. A</p>	

<p>ROCK SEDIMENT DIKE</p> <p>Where applicable, or as directed:</p> <p>Rock sediment dikes are most effective in areas where sediment control is needed with minimal disturbance. They can be used as sediment control structures or diversion dikes, in low areas or areas where concentrated flow or base flow is expected. Rock sediment dikes should not be placed in Waters of the State or any other streams that have a base flow.</p> <p>A non-woven geotextile fabric shall be installed over the soil surface where the rock sediment dike is to be placed. The upstream face of the rock sediment dike shall be composed of a 1-foot thick layer of 3/4-inch D50 Riprap.</p> <p>The body of the rock sediment dike shall be composed of minimum 9-inch D50 Riprap.</p> <p>Rock sediment dikes shall have a minimum top flow length of 3-feet (2-foot flow length through the riprap and 1-foot flow length through the washed store).</p> <p>The rock must be placed by hand or mechanical placement (no dumping of rock to form the sediment dike) to achieve the proper dimensions.</p> <p>A sediment sump shall be located on the upstream side of the structure to provide sediment storage. The upstream side of the sediment sump shall have a slope of 5:1V to inhibit erosion of the sediment storage area. The minimum depth of the sediment sump shall be 2-feet. Mark the sediment cleanout level of the sediment dike with a stake in the field. Seed and mulch all disturbed areas.</p>	<p>ROCK SEDIMENT DIKE</p> <p>Where applicable, or as directed:</p> <p>The key to a functional rock sediment dike is continual monitoring, regular maintenance and regular sediment removal. Regular inspections should be done every seven (7) calendar days and within 24-hours after each rainfall event that produces $\frac{1}{2}$ inches or more of precipitation.</p> <p>Remove sediment when it reaches 50% of the sediment storage volume or when reaches the top of cleanout stake. All rock sediment dikes should be removed within 30 days after final site stabilization is achieved or after they stabilize. Disturbed areas resulting from the removal of rock sediment dikes should be permanently stabilized.</p>
<p>C-114</p> <p>REV. A</p>	

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<p>C-114</p> <p>REV. A</p>	



W.S. Lee Steam Station – Ash Removal Plan

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Appendix B: Glossary

The following table defines the terms used in this Plan.

Term	Definition
ABSAT	Duke Energy organization acronym for Ash Basin Strategic Action Team
Ash Fill Area	Area located within the W.S. Lee property directly across Lee Steam Plant Road from the IAB where CCR was used as backfill into a borrow area. Also referred to as the “Abandoned Borrow Area” or the “Former Borrow Area”
Ash Basin	A topographic depression, excavation, or dammed area that is primarily formed from earthen materials; and an area that is designed to hold accumulated coal combustion residuals in the form of liquid wastes, wastes containing free liquids, or sludge, and that is not backfilled or otherwise covered during periods of deposition
Ash Removal Plan	Plan required by the Consent Agreement for the removal of ash from the William States Lee (W.S. Lee) “Inactive Ash Basin” (IAB) and the “Ash Fill Area” and all areas where ash, other coal combustion residuals, or their constituents, including contaminants, may have potentially migrated from these ash placement areas (the Site)
Bottom Ash	The agglomerated, angular ash particles formed in pulverized coal furnaces that are too large to be carried in the flue gases and collect on the furnace walls. Bottom Ash falls through open grates to an ash hopper at the bottom of the furnace
Coal Combustion Residuals (CCR)	Residuals including fly ash, bottom ash, boiler slag, mill rejects, and flue gas desulfurization residue produced by a coal-fired generating unit
Consent Agreement	Consent Agreement 14-13-HW between the South Carolina Department of Health and Environmental Control and Duke Energy to assess and remove ash from the “Site” at W.S. Lee Steam Station
Contact Water	Surface water which accumulates during rainfall events and seepage from stockpiles of ash with entrapped water
Decanting	The act of removing water from ash
Dewatering	The act of removing water from an ash basin

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Term	Definition
Duke Safe Work Practices	Document detailing the Duke Energy safety guidelines
Engineer of Record	Duke Energy or 3rd party contracted engineer responsible for final verification of specific plan actions and documents
Excavation Activities	Tasks and work performed related to the planning, engineering and excavation of ash from an ash basin or fill area
Factor of Safety	In reference to dam safety, the ratio of the forces or moments resisting mass movement to the forces or moments tending to produce mass movement
Free Water	Water above the ash contained in the IAB
Fly Ash	Very fine, powdery material, composed mostly of silica with nearly all particles spherical in shape, which is a product of burning finely ground coal in a boiler to produce electricity and is removed from the plant exhaust gases by air emission control devices
Inactive Ash Basin	Unregulated basin located southeast of the WS Lee power plant. Constructed in 1951 and expanded in 1959. Used to impound CCR from 1951 to 1974
Implementation Schedule	Schedule for the major activities required to complete the work included in the ash removal project
NPDES	National Pollutant Discharge Elimination System
NPDES Permit	A permit that regulates the direct discharge of wastewater to surface waters
Off-Site Storage Facility	A structural fill or disposal facility for the long term storage of coal combustion residuals, located outside the W.S. Lee Steam Station property boundary
Permitting	Federal, state, county or local government authorizing document
Primary Ash Basin	Southeastern cell of the active ash basin system located at W.S. Lee Steam Station
SCDHEC	The South Carolina Department of Health and Environmental Control

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Term	Definition
Secondary Ash Basin	Northwestern cell of the active ash basin system located at W.S. Lee Steam Station
Site	Inactive Ash Basin, Ash Fill Area, and all areas at W.S. Lee where ash, other coal combustion residuals, or their constituents, including contaminants, may have potentially migrated from these ash placement areas
Work Plan	Document detailing activities to accomplish a specific task or scope of work
W.S. Lee	William States Lee Steam Station located at 205 Lee Steam Road, Belton, South Carolina in Anderson County (Tax Map Number 260-00-01-003-000)

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Appendix C: Reference Documents

The following documents were referenced in preparation of this Plan.

Ref	Document	Date
1	Consent Agreement 14-13-HW	September 29, 2014
2	Retired (1951) Ash Pond Dam Access Route Stability Evaluation	July 25, 2014
3	Existing Basin Dike Stability Evaluation and Liquefaction Potential Study, 1951 Retired Ash Basin	September 12, 2014
4	Investigative Derived Waste Clarification Letter	November 12, 2014
5	Supplement to Retired (1951) Ash Basin Dike Stability Evaluation Excavation Stability Evaluation	November 21, 2014
6	Supplement 2 to Retired (1951) Ash Basin Dike Stability Evaluation Excavation Stability Evaluation (Construction Loading)	December 11, 2014
7	Interim Report of Exploration Activities, Abandoned Borrow Area	November 7, 2014
8	Supplement to Retired (1951) Ash Pond Dam Access Route Stability Evaluation	December 10, 2014
9	Investigative Derived Waste Sampling Abandoned Borrow Area-Lee Steam Station	November 26, 2014